THIRD SERIES VOL 54 NUMBER 5 FEBRUARY 1947

THE JOURNAL OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS

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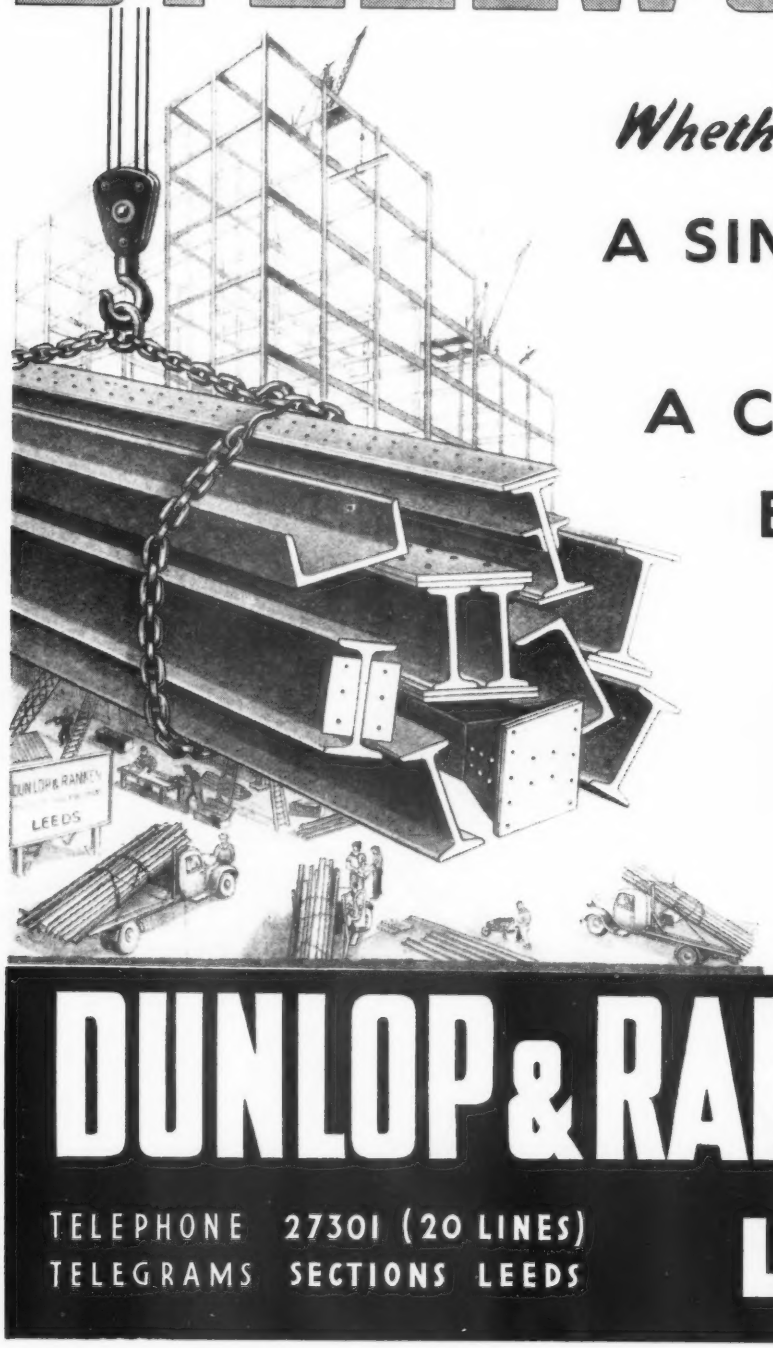

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THIRD SERIES VOL 54 NUMBER 5 : FEBRUARY 1947 : 66 PORTLAND PLACE LONDON W1 : TWO SHILLINGS & SIXPENCE

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Production of this Journal

Members will realize that this number of the JOURNAL was produced under great difficulties in the present state of national emergency. We closed for press on the usual date but printing has had to be postponed so that the date of publication is uncertain. The number of pages has had to be reduced and their make-up is not all we would have wished. That it has been produced at all is due to strenuous efforts under great difficulties and to the great co-operation we have received from our new printers, Messrs. Keliher, Hudson and Kearns, Ltd.

The Royal Architectural Institute of Canada

The Royal Architectural Institute of Canada has conferred on Mr. L. Sylvester Sullivan [*F*] an Honorary Fellowship of the R.A.I.C. in recognition of the valuable services rendered by him in the past years as their representative at the R.I.B.A. and elsewhere in Great Britain. The event is to be announced at the Annual General Assembly which takes place at Montreal on 21 and 22 February.

Architectural Competitions

At their meeting on 14 January the Council of the R.I.B.A. approved the recommendation of the Competitions Committee that the following paragraph be added to Clause 2 of the Model Form of Conditions for Architectural Competitions:—

> In the event of the death of the Assessor or, in the case of a Jury, of one of the Architect-Assessors before the completion of the competition, or of his being unable to continue to act through illness or some other cause, the Promoters will, in consultation with the President of the Royal Institute of British Architects, appoint another architect to act in his place and to carry out the duties of Assessor as set forth in these Conditions and Instructions.

Ancient Monuments Board for Scotland

The Minister of Works has appointed a fresh Ancient Monuments Board for Scotland. The members of the Board are as follows: *Chairman:* The Rt. Hon. Lord Cooper, O.B.E., K.C., LL.D. *Members:* The Rt. Hon. The Earl of Haddington, M.C., T.D., D.L. (representing the Society of Antiquaries of Scotland); R. F. J. Fairlie, Esq., R.S.A., LL.D. [*F*] (representing the Royal Commission on Historic Monuments); Ian G. Lindsay, Esq., F.S.A. (Scot.) (representing the Scottish Education Department); A. Graham Henderson, Esq., A.R.S.A. [*F*] (representing the Royal Incorporation of Architects in Scotland); Professor Stuart Piggott, B. Litt., F.S.A.; Professor J. D. Mackie, C.B.E., M.C., M.A.; W. Douglas Simpson, Esq., M.A., D. Litt., F.S.A.; Professor W. Croft Dickinson, M.A., Ph.D., D. Litt.; A. R. Cross, Esq., M.C., T.D.; B. H. St. J. O'Neil, Esq., V-P.S.A., Chief Inspector of Ancient Monuments. *Secretary:* J. S. Richardson, Esq. [*A*] F.S.A. (Scot.).

The President opens the Kerbside Shelter Exhibition

At the invitation of the London Passenger Transport Board, the President, Sir Lancelot Keay, opened on 7 February at Charing Cross Station the exhibition of designs submitted in the competition for the new London Transport Kerbside Shelter. The winning design was by Mr. Donald Dex Harrison, Dip.Arch.(Leeds), A.M.T.P.I. [*A*]. The design placed second was by Messrs. Arcon and O. Safir.

The President, to an accompanying rumble of Underground trains, said the Board had always sought the most effective and efficient means of solving its problems. They had realized that beauty and utility could be combined without loss of efficiency. The very mention of the L.P.T.B. recalled the name of Frank Pick who had laid the foundations of modern transport design and who had encouraged little-known artists; this competition was in the 'Pick' tradition. In the gradual process of replanning and rebuilding our towns an improvement in street furniture was one of the essentials if seemliness and orderliness were to be attained. This competition was a step towards that end and he hoped the example would be followed by other authorities. The Board had recognized, what was too often overlooked, that nothing was too small or insignificant as to make the touch of the artist unnecessary.

R.I.B.A. Sessional Papers

The return to the normal peace-time practice of holding formal General Meetings at the Institute, about once a month, has proved to be a wise step. All the meetings held so far this Session have been very well attended. Of the two most recent, Mr. John Summerson's paper attracted a learned audience and Professor Holford's paper on *New Towns*, reported in this JOURNAL, so filled the Henry Jarvis Hall that the partition between the Hall and the Foyer had to be lowered, an event which has not occurred since Mr. Lewis Mumford addressed a meeting last year.

Lectures on Office Organization

The lecture-discussion on *Partnership and Profit-sharing*, held on 4 February, was very well attended by a keen audience of younger members, one of whom was even heard to say that he had never been in the R.I.B.A. building before! The speeches were good, and the discussion lively; a full report of the meeting will appear in the March JOURNAL. Members should make a special note of the next meeting of this interesting series when the subject will be *Architects to Public Authorities*. The speakers will be Mr. Hubert Bennett [*F*], County Architect, West Riding of Yorkshire; Mr. D. E. E. Gibson [*A*], Architect to the City of Coventry; Mr.

The Secretary R.I.B.A. reading the list of awards of R.I.B.A. Prizes and Studentships for 1947 at the General Meeting on 14 January. On the right of the President are Mr. A. Leonard Roberts [*F*], Hon. Secretary and Mr. John L. Denman [*F*], Hon. Treasurer.

Kenneth Campbell [*A*], Miners' Welfare Commission. The chairman will be Mr. R. H. Matthew [*A*], Chief Architect to the London County Council. With such a galaxy of talented speakers, the meeting should be most interesting. The date is Thursday 27 March, 6.30 p.m. Refreshments available 6 p.m.

The Success of 'Britain Can Make It'

In a recent statement to the Press on the achievements of the *Britain Can Make It* Exhibition, Mr. S. C. Leslie, Director of the Council of Industrial Design, said of the work of the architects: 'The setting of the Exhibition, which has found almost universal favour at home and abroad, has fully realized the Council's wish to demonstrate the outstanding capacity of Britain's young experts in this field. The technique of displaying our goods has been one of the weakest aspects of British salesmanship. The designers and artists who created the setting of the *Britain Can Make It* Exhibition can be credited with making good this weakness in a single stride.' He said further that the furnished rooms were among the sections which aroused the most intense public interest, the kitchens being special favourites.

Mr. Leslie's statement makes very clear the fact that, in addition to the interest it aroused in Great Britain, the Exhibition had a quite staggering success overseas. This is well shown by the single fact that demands were received from overseas for no less than 21,000 photographs. Although it was a 'prestige' exhibition and not a trade fair, 7,106 overseas buyers from 67 countries made contact with the Council at the Exhibition; one quarter of these buyers came from British Dominions.

Members will not forget that the prototype of this form of Exhibition was that on *Everyday Things* organized by the R.I.B.A. before the war. While it is true that the resources of the Council of Industrial Design are far larger than those of the R.I.B.A., those who took part in *Everyday Things* will realize the great size and complexity of the task of organizing such an exhibition under what at the time were virtually war conditions, and we may therefore offer our respectful congratulations to the Council on its phenomenal success.

Royal Academy School of Architecture

The Royal Academy is preparing to reopen its School of Architecture as a day school for 10 advanced students who have taken a British University degree in architecture or have passed the Final Examination of the R.I.B.A. The Director of the School will be Professor A. E. Richardson, R.A. [*F*], and the Master Mr. Marshall Sisson [*F*]. The training will be for one year and will be gratuitous, and the students will compete each year for a Royal Academy Grand Prize of £300, and a Second Prize of £150 presented by Lord Fairhaven. The course is for qualified students and comprises an intensive study of civic architecture and the preparation of designs for buildings of national importance. Applications for this year had to be submitted to the Secretary, Royal Academy of Arts by 12 February. Unfortunately we received the notice of this too late for the last JOURNAL.

The new Journal type

With this issue the JOURNAL changes its editorial style of type face from that known as 'Monotype Baskerville 169' to 'Times New Roman 327', a renowned type face which was cut for THE TIMES by the Monotype Corporation Ltd.

Good design, in both architecture and printing, depends upon the knowledge and application of certain general principles, such as proportion, balance, harmony, contrast, and, not least important, fitness for purpose. Type is the voice of the printed page and the main object of typography is to achieve typographical harmony, combined with legibility, by the use of a type size suitable to width and depth of page without overcrowding and the avoidance of 'rivers' of white space straggling down the page and a type face which is 'easy on the eye'.

Times Roman is in its way a cross-section of our typographical world, compromising between the old and the new. Times and Perpetua italics, for instance, are more closely related to their roman than any other type faces—their italics might be called a sloping roman—whereas Baskerville (the late JOURNAL type) italic was mildly decorative by the nature of its dandified, almost swash, capital letters. (See the headings of 'New-Year Nonsense' in the December JOURNAL.) Aesthetic considerations alone, however, have not prompted the change: how a type is used, measure, spacing, inking, leading or absence of leading, and the paper, all affect the 'colour' of a black type (a black optical *impression* can range from jet black to grey). Times roman has the support of eminent practitioners because of its high degree of legibility, the grace but sturdiness of its letter forms and its peculiar adaptability to showing itself to advantage on shiny 'art' paper, such as is used for the JOURNAL.

Readers will also notice that, with the exception of these first two JOURNAL pages, the whole is now set in three columns to the page instead of two. With small type which is 'set solid' (i.e. without extra space between lines) a short line makes for legibility; with long lines the eye is apt to wander off the line. In the first two pages the same effect is obtained with the longer lines by putting spaces (or 'leads') between them. This last makes for dignity and a better display of sub-headings, but is too extravagant of space to use throughout the JOURNAL in these days of paper stringency. Finally, the new type and the adoption of three column measure ease the problems of editorial make-up.

In these changes the advice has been taken of Mr. James Shand, of the Shenval Press, and of Mr. Robert Harling, who designed the new cover.

The Cover Picture

The photograph on the cover of this JOURNAL is by Mr. Bryan P. Westwood, A.A.Dipl. (Hons.), [*A*], and he has entitled it 'The Thatcher at Work'.

R.I.B.A. Diary

TUESDAY 11 MARCH 6 P.M. General Meeting. '*Housing and the Architect*'. J. H. Forshaw, M.C., M.A. [*F*].
SATURDAY 15 MARCH Danish Domestic Design Exhibition closes.
FRIDAY 21 MARCH 7 for 7.30 P.M. The Annual Dinner at the R.I.B.A.
THURSDAY 27 MARCH 6.30 P.M. Lecture Discussion. '*Office Organization; Architects to Public Authorities*'. Speakers: Hubert Bennett [*F*], D. E. E. Gibson [*A*] and Kenneth Campbell [*A*]. *Chairman*, R. H. Mathew [*A*].
TUESDAY 15 APRIL General Meeting. Presentation of Royal Gold Medals for the War Years.
MONDAY 5 MAY Annual General Meeting.

New Towns: Problems of Design & Organization

By Professor W. G. Holford, M.A., B.Arch. (Livpl.), A.M.T.P.I. [*A*]

Read before the Royal Institute of British Architects
28 January 1947. *The President in the chair*

Prologue: The presentation of some ideas on the subject of New Towns, as with so many other planning problems of the moment, is like the staging of a play with the third act incomplete. Suspense may be raised to a high pitch; but there is no final tableau.

Within the last years, the public, through the medium of illustrated books, exhibitions, the film and the spoken word, has grown familiar with the standard material of the play. It is the story of a country that contained fewer people than Greater London does now. They lived primitive but socially balanced lives in picturesque surroundings, which were gradually transformed—through improvements in taste and estate management—into the orderly and well-designed country seats and villages and towns which we associate with Georgian architecture. Meanwhile, that black-faced but gold-producing character, the Industrial Revolution, was bringing new resources, new conflicts and a vastly increased population to threaten the citadels of the aristocracy.

Act Two opens on a scene of sharp contrasts. Victorian affluence, respectability and bad taste on the one hand, Engels writing of the deplorable conditions of the working classes on the other. Architecture a battle of the styles ; and then a free-for-all, with no holds barred. Design and engineering carefully distinguished. By-law houses and high densities in the towns, and the gradual decay of the countryside. Smoke from the furious consumption of our national resources covers all ; and out of the smoke comes the figure of Ebenezer Howard, pointing the way to the Garden City—'A Peaceful Path to Real Reform'. The curtain descends with the audience, or at least the younger half of it, part-fascinated and part-indignant at the iniquities of its forefathers, vowing that this sort of thing must never be allowed to happen again. No one, at the Second Interval, could ask more of an audience than that.

The Third Act opens ominously. The end of the first World War leaves more problems than it solves. Boom is followed by slump. Britain builds nearly four million houses, and standards of living rise. But towns become more noisy, more expensive and more inconvenient ; while the suburban rash spreads over the countryside. Motor traffic paralyzes the roads. Modern architecture is admired abroad, but at home is found only too often to be 'injurious to amenity'. Patronage declines. Popular art is found mainly in the suburb. The Depressed Areas go downhill in spite of special legislation in their favour; and the population of Greater London grows to ten and a quarter millions[1]—a quarter of the total for England and Wales. So the Royal Commission presided over by Sir Montague Barlow begins its sittings. It is an uneasy and restless 'normality' that is shattered by the outbreak of the second World War.

A year passes; and then physical destruction and obsolescence reach a climax in the flash and rumble of aerial bombardment. The pattern of life is changed even more than the pattern of towns. Economic planning in the national interest controls our food, our clothes, our shelter and our employment. Destruction breeds a greater hope and a more constant form of courage. And imagination is not lacking to set the stage for a new scene.

The stage manager is in a difficulty. It is true that he has a stirring backcloth, a hopeful dawn painted behind those ruins which time and the bombs between them have made, perhaps, more noble than the buildings were before. Yet on the stage itself there is very little—a few artists' sketches, a few technical diagrams, a list of properties, a bundle of directions, and a great dearth of carpenters ; the Transformation Scene itself is still in preparation. So it is with the New Towns.

This simile from the stage may serve as prologue and apology for the performance that follows, its last act being played within scenery that does not yet exist. It also emphasizes what seems to me an essential element in the programme, and one that can easily be mishandled—I mean the element of Design and its exact function in the whole complex process of Organization.

The Twin Targets: It is said that no architect should talk, except with his pencil. But perhaps the architect as town-planner may be allowed to do so, since besides playing an instrument himself he may have to set the pace for others. Moreover, he is dealing with four dimensions, and time is not an easy subject for graphic representation. So he has to fall back on words, in the hope that they will present a picture to the mind's eye.

The twin targets of town and country planning that challenge us now are the rebuilding of the inner parts of our older and our war-damaged towns, and the development of new growth outside. The former is by far the greater and more intractable problem of the two. Some means have been given to planning authorities since 1944 to deal with it, and more are on the way in the Bill now before the House of Commons; but in the technical field at any rate few of them have taken its true measure.

The position has been studied sufficiently however, to enable us to guess at the size and nature of that outward movement which, whether it is planned or fortuitous, will move thousands of families away from the congestion of the big urban centres. In London, for example, an Interdepartmental Committee, followed by the Advisory Committee for London Regional Planning, under the Chairmanship of Mr. Clement Davies, M.P., have both reviewed Sir Patrick Abercrombie's report, and while proposing some alterations to his scheme for redistribution of population as between new and expanded towns, have fully substantiated the need for planned decentralization and for the development of those towns capable of taking a definite but limited increase of population.

So the Greater London Plan has fixed a target, and its figure of slightly over one and a quarter million people as the ultimate addition to the 1938 population outside the Suburban Ring in new and expanded towns and the so-called quasi-satellites, looks like becoming part of accepted Government policy.[2] If that is so, and if the implications of this policy are accepted and carried out by the Planning Authorities, it marks already a tremendous change from pre-war mentality. It is significant that, only recently, in the case of seven West London boroughs, the authorities themselves met to suggest the setting up of a New Town, on the ground that some 20,000 families would still be in search of a home when the housing capacity of their areas had been fully developed.[3]

The social basis of our present New Towns is to be found, therefore, in the part they can play in receiving families decentralized from the big concentrations, while these urban centres are themselves being redeveloped. In the case of London, Sir Patrick Abercrombie recommended eight such towns out of the 30 sites which he investigated, as being the right proportion between new growth and extension, i.e., roughly a third of the million and a quarter. The Regional Advisory Committee said:

'. . . . New towns cannot be justified solely as being necessary to accommodate redistributed populations, because the whole of the redistribution could, if necessary, be effected in the existing communities within 50 miles of London. We agree, however, that a certain amount of redistribution should be dealt with by the development of new towns, as these will have intrinsic planning advantages and will form valuable

[1] The mid-1938 figure for the area, including London County and City, which was taken for the purpose of the Greater London Plan, was 10,324,002.

[2] The actual figures proposed by Sir Patrick Abercrombie and by the Advisory Committee are given in para. 81 of the Report of the Technical Sub-Committee of the Advisory Committee for London Regional Planning. H.M.S.O. 1946.

[3] Conference at Chiswick Town Hall, 20 January 1947.

Mr. Leopard's Cottage

examples for guidance in planning extensions of existing towns.'[4]

They might have added that it would be physically possible though socially disastrous to accommodate the lot in a fringe somewhat extended and more tightly packed. It is, of course, a problem of planned distribution as well as of finding a sufficient quantity of land.

Civic design, like any other planning operation, is not brought to life solely by the occasion; there has to be the impulse —in other words, the will and the ability— to make use of the occasion to produce something valuable and enduring. One remembers the character in *Punch* who said with a wave of his hand towards his living room, 'What do you think of my occasional tables?' To which the reply of a candid friend was—'Too damned frequent.' One cannot help feeling the same about temporary houses, about fringe development, and about new houses in the Green Belt, however well-designed they are; for they are born of a necessitous occasion. Architecture is not solely an affair of production, it is also a form of self-expression, the embodiment of emotions, traditions and aspirations and a continuing part of the landscape.

New towns may owe their origin to any one or more of a number of causes; the overflow of congested cities, the exploitation of mineral wealth, feudal dependence, military needs, or the pioneering spirit seeking a new field to colonize. Their direction may be autocratic democratic or even technocratic. Ours, at the moment, are largely bureaucratic, for the good reason that administrative decisions—once policy is determined by Parliament—are becoming more and more the responsibility of Government Departments, and of their agents the Public Corporations, who possess, as a rule, a greater degree of managerial freedom. But whatever their origin, provided always that they are shaped by a conscious effort of will, the results are architecture. By architecture I mean the skilled expression of a social fact in terms of buildings, landscape and utilities—a design crystallizing an idea.

It is so often said, nowadays, that social experiments should not be dominated by architectural conceptions; as if architecture and society were forces of the same kind that could somehow come into flat opposition. While it is true, as Mr. Churchill said but recently, that 'we shape our buildings, then our buildings shape our lives', yet initially the new buildings and the new towns that we create are reflections of our own society. The Frankenstein theory that architects can destroy society by monsters of their own begetting, belongs, I think, to fiction. The monsters seldom emerge from the covers of their portfolios.

The history of new towns in all ages illustrates the fusion in varying degrees of what I have called 'occasion' and 'impulse'. Some of the mediæval towns, as Thomas Tout remarked[5], were created by the political necessities of the landlord; he leased land in return for service, at the same time creating increment for his descendants and protecting his frontiers.

New Winchelsea, Edward the First's new town in Sussex (1297 onwards) shows the characteristic British virtue of adaptability to terrain and to circumstances. Its architecture is interesting, its layout remarkably informal in spite of regular streets; and although it has grown little in six centuries, like its contemporaries the Welsh garrison towns, it is a fruitful and pleasant place, and has some lessons for us still.

Just before the French Revolution the architect Claude-Nicholas Ledoux designed and partly built a new town at the Salines of Chaux in Lorraine. This is interesting because it links one of the last of the Renaissance ideal plans with the first of the 'social' plans, which after the Revolution led on to Owen's *Utopia*, Titus Salt's *Saltaire*, J. S. Buckingham's *Victoria*, and then to Bournville, Port Sunlight, Letchworth, Welwyn Garden City, and Stevenage. Ledoux did in fact wrap what he called a Social Village around the chemical industry from which the development originated. The buildings that remain are noble indeed, the town that was never built is fantastic. Not indeed too fantastic for Ledoux to execute, but too considerable for this particular industry and situation to support. In the midst of an architecture which speaks of grandeur and oppression, there is nevertheless a strong sense of the dignity of labour and a foretaste of the new social principles that were henceforth to control civic design. Here is the impulse without the occasion.

With the exception of the late Georgian architects, later in date than Ledoux but contemporary in feeling, the emphasis in the founding of new towns and villages moved after this in the opposite direction, without adequate organization for design. Although the lowest common denominator, the standard house and its equipment, was lifted higher in the scale of mechanical convenience and accessibility and sanitary condition; yet the simple dignity and fitness of public and communal buildings, the use of architecture and landscape to express an achievement and to awaken a response in citizen and visitor alike, was too seldom attempted, and has not yet surpassed the eighteenth century examples.

This expression seems to me the supreme task of the designers of our New Towns; it is for them to combine domestic and public programmes and give them a more lasting significance. A town that is a complete entity, and that has a compact centre, its own industry and a variety of green spaces and residential neighbourhoods, has a chance to achieve such a result. A town that is designed and built well within the compass of one generation, has an even better chance. In the U.S.S.R. they are evidently retracing lost ground in an attempt to do this very thing. Recently Mr. J. M. Richards, in a thoughtful essay on the Suburb, has suggested that we must search for the mainsprings of popular ideas on building, no matter in what stylistic jungles and retreats we find them, if we are to broaden the modern movement in architecture.[6]

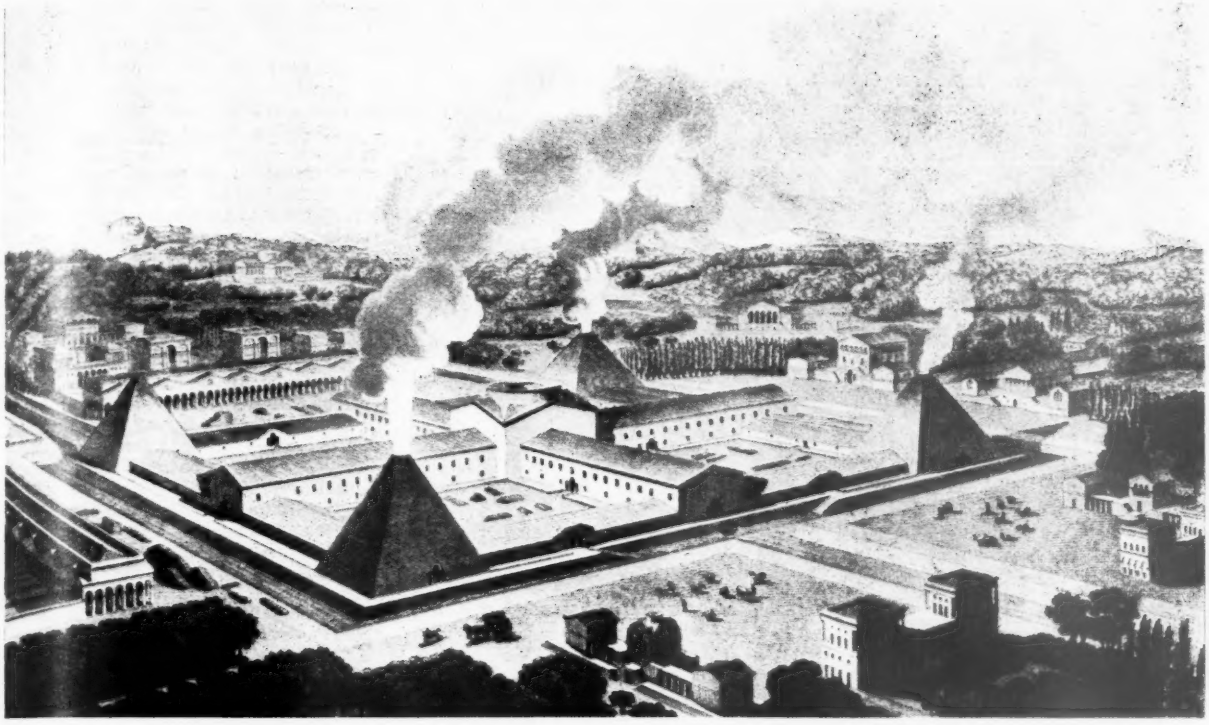
Glance for a moment at the picture of Mr. Leopard's Cottage. It was specially painted from life to illustrate one of the commonest sights in the suburbs and the countryside; one which is uncritically admired by a large number of people and unfeelingly condemned by others. It is not, like Mr. Wemmick's Castle at Walworth, so wonderfully described by Dickens in 'Great Expectations', an extreme example of a suburban stronghold; on the contrary, it is a most normal one. You will see that it has no architectural pretensions whatsoever. It offends against the canons of the C.P.R.E., the local by-laws, and the intentions of the Ribbon Development Act. It has no main water, but it has—only too clearly—a wireless. With its tile-hung walls and slate roof it has a would-be cavalier appearance; but the portable garage is undeniably a little roundhead. The front door is at the back, and the ornamental entrance gate is not for use; neighbours enter at the side. Yet hardly a soul passed this place without stopping to look, and more often than not, to admire. I suggest that there may be an inward and an outward cause for this admiration. The outward cause is fairly obvious; it is the high standard of maintenance that shows itself alike in house and garden. The painting of the window bars, and the gay informal planting of the flower beds and borders, reflect the love and care bestowed on them by Mr. Leopard and his wife. Maintenance is a sore subject just now, when illicit repairs have caused the Minister of Works to issue the most rigid restrictions in history on private building; but it is an essential element of civic design.

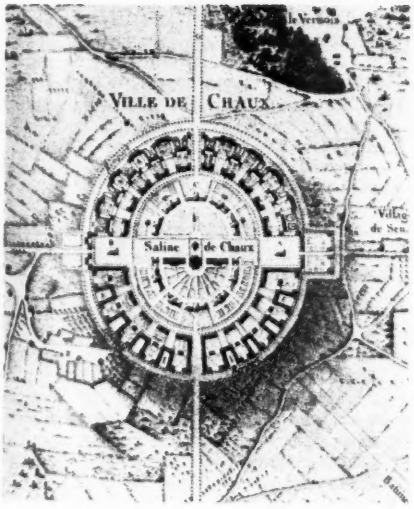
I am more concerned at the moment with the inner causes of sympathy with Mr. Leopard's Cottage. In the first place it radiates a feeling of security and independence, which is evidently widely shared. Like Mr. Wemmick's Castle, it proclaims itself 'off-duty', and for much the same reasons. Secondly, its contribution to the general neighbourliness is individual and voluntary, not imposed like a tax. It gives a certain pleasure to others because it obviously gave much pleasure to Mr. Leopard. And there

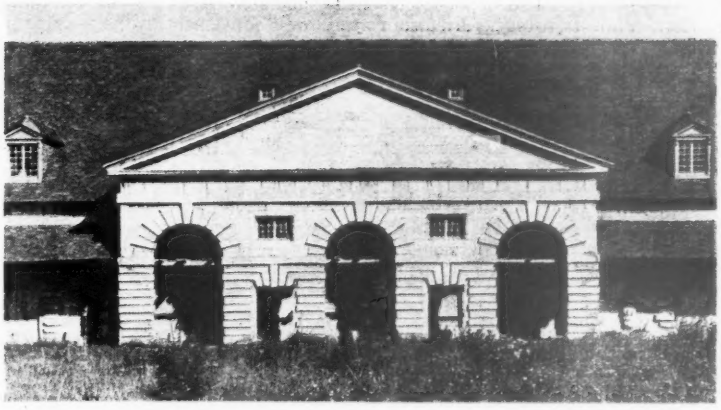
[4] Para. 26 of the Report of the Technical Sub-Committee, 8 July 1946.

[5] *Mediæval Town Planning:* Thomas F. Tout. Manchester, 1934.

[6] *'Castles on the Ground':* J. M. Richards. Architectural Press.





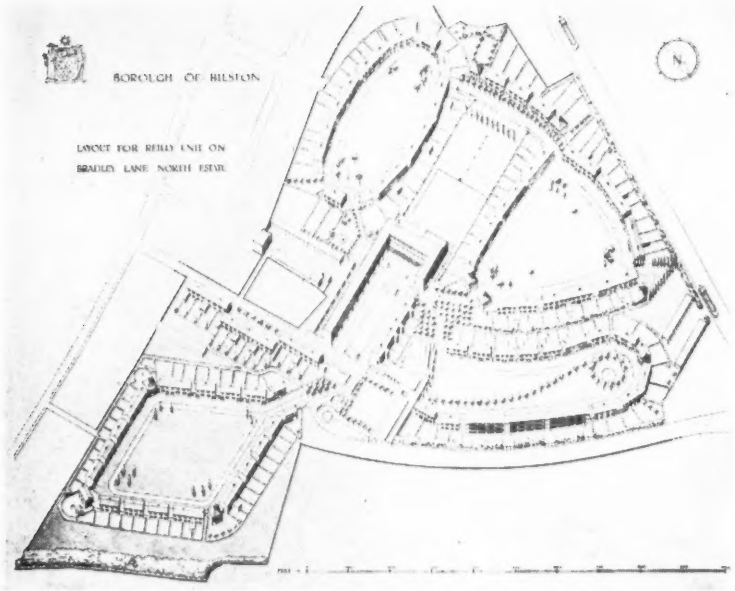


The town of Chaux in Lorraine, planned just before the French Revolution by Claude-Nicholas Ledoux. 'The buildings that remain are noble indeed ; the town that was never built is fantastic.' Above : perspective view of the cannon foundry. Left : plan of La Saline de Chaux. Right : one of the buildings today.

is no reason why the same pleasure should not be raised to a higher degree if the basic material is improved. As Mr. Clough Williams-Ellis said in his broadcast last month, 'what most of our citizens seem most to need is a place where they can feel warmly and intimately at home.' It will be useless to attempt new community buildings or new layouts of housing which do not also satisfy these diverse, human and sometimes quite un-architectural desires.

In other words, we have to establish the social sanctions before we can revive a social architecture; and without a social architecture we cannot hope to reach the higher achievements of civic design. The Greeks developed the megaron from the small house, and the temple from the megaron; and although the structural parallel no longer holds good, the social principle still applies. I take it that something akin to this feeling animates Sir Charles Reilly in the creation of his 'greens', and Mr. Thomas Sharp in his approach to village planning. Both have sketched a social programme, and both pave the way for designers who will give the programmes architectural form in the landscape.

The Universal Basis of New Town Plans. The broad principles are very much the same all over the world. Look, for example, at the plans for new towns and settlements —many of them made during the war or soon after its close—for places as far apart as Hammerfest, Greater Warsaw and the devastated villages in Poland, Lidice in Czechoslovakia, or the proposed satellites to Rotterdam, in Holland. In all these examples, subject to slight variations of density due to climate and custom, the fundamental programme of social building is astonishingly similar. There is the same



The borough of Bilston. Layout of a scheme in 'greens' by Bernard A. Miller, B. Arch. [*F*].

attempt everywhere to define the maximum population, or at least the maximum limits of spread, in relation to the surrounding country; there is the same range of residential type, from small single, semi-detached and terrace houses, to blocks of maisonnettes or flats; there is the same care to provide opportunities for industrial, agricultural and service employment within easy reach of a large proportion of the inhabitants—both men and women—there is the same careful placing of schools and public buildings with their attendant open spaces: in a word, there is the same general concept of the residential neighbourhood.

I cannot myself see any practical advantage in running down this basic idea, on the ground that it is petty and insufficient, or that it is merely a new way of creating dormitories, or segregating cranks, or that it is unnecessary to build new towns as well as adding to those which history has already given us. Quite apart from occasions such as the present, when population movements demand them as one of the ways of attaining a more rational pattern of town and country, the impulse towards the creation of new forms and fabrics of living is one of the oldest, and can be one of the noblest of human activities. Howard's definition of a garden-city, adopted with some minor modifications by the Town and Country Planning Association as its main principle, is not only right and applicable—it is universally applicable at the present time. It is, of course, not the only basis of planning in an industrial country; far from it. But it clearly corresponds to a deep-seated social as well as architectural impulse among city dwellers the world over.

It follows, I think, that where the basic idea is sound and universal, the individual manifestations should spread into the most fertile variety. National and regional differences can be accentuated by every advantage of local circumstance and character; so that even in the same area New Towns will have histories, characters and appearances entirely different. No formula, however convenient to the administrators, will ever achieve this variety; it can only be properly secured by plans and designs which are produced in response to particular programmes. Sir Charles Reilly is suggesting that some of his 'greens' should take the names of the individual architects who design them. While this may be invidious where many are concerned in producing the final result, I am sure the instinct to differentiate is right.

So the critics' place is properly among those who draw up the programmes. They can prevent those responsible for the new town from making impossible pretensions, such as that it is socially independent of its neighbours, self-sufficient in point of employment or higher education or even shopping, and self-consciously superior to both city and suburb. They can equally avoid the other extreme of setting the target too low and producing just another housing estate without a character of its own.

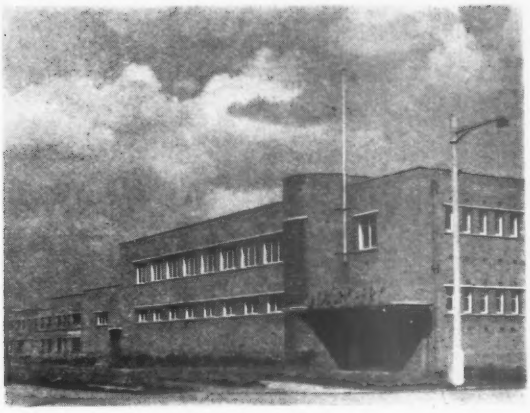
National and Local Interests. Objections there are bound to be. Demands for national planning have been insistent during the last few years; but this instance of it, namely, the selection of site on a basis of national requirements, taking precedence as it does over local considerations, is looked on by those directly affected as a form of despotism. The first Section of the New Towns Act, which deals with the designation of sites, does in fact place the responsibility firmly on the Minister, but he in turn is acting on the public behalf and has to account to Parliament.

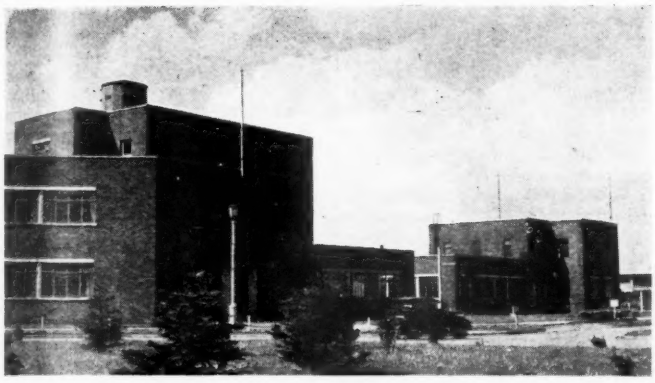
The national decisions, then, are without question taken by the Minister: the regional ones—by which I mean the case for particular sites within the region—by the Minister and the planning authorities in consultation. The responsibility for the development of the town itself is placed on a corporation, acting with and on behalf of a local authority which takes over progressively all its assets. If you read the Act through you will notice that the Minister has to exist in a state of constant satisfaction over the activities of those his progeny. He exercises what *The Times* calls the equity shareholders' rights. But with all respect to the holder of the office, his case may one day become that of the 'Old Woman who lived in a shoe'.

Perhaps the rest of the quotation is not quite exact, for I cannot imagine the present Minister in any position in which he 'didn't know what to do'. But the fact remains, that no matter what general directions he gives, he and his Department cannot draw up each local programme to suit local conditions, nor can they design each town. Those two jobs belong jointly to the corporation, and the local authority; the initial execution principally to the latter. That brings me to the core of the argument; under what conditions can these functions most successfully be carried out?

The New Patronage. Sidney Smith once quoted Lord Thurlow as saying, 'Did you ever expect a corporation to have a conscience: when it has no soul to be damned, and no body to be kicked?' This matter of conscience is critical, it seems to me, in the make-up of the New Towns Corporations, even though they are working on behalf of those who, as citizens of the new towns, do not exist for the most part; and even though in 10 or 15 years they themselves will cease to exist as a Development Corporation and turn into a local authority. Conscience is especially needed in the exercise of two functions in particular: that of drawing up a planning programme which is in effect a rational speeding-up of an otherwise slow and piecemeal process of local growth; and that of setting terms of reference for the technicians. Right at the start there is a technique of administration, and there is a technique of design; and both have to be acquired rapidly. For the relationship between the committee of clients and the team of designers is a most important one. The other functions, those of execution and management, call rather for drive and efficiency; and for these there is plenty of business experience to go by. But the machine should not move at full speed until the course and the controls have been set; and it is precisely in the adjustment of the design control that I suggest our touch is least certain. The art of commissioning work from scientists is being, by force of circumstance, revived; the art of commissioning work from artists is sadly in need of revival.

The primary difficulty is that no committee can design a building or lay out a topographical plan or sketch a perspective. Only the most disciplined of lay committees can make a constructive criticism of a design; and then only in terms of its





Four buildings at the Team Valley Trading Estate. Top left : some of the standard factories. Bottom left : the northern pavilion of the administration building, restaurant and bank. Top right : the Cadbury-Fry depot Kingsway. Bottom right : corner of a bus shelter and the Sigmund Pumps building, Kingsway. The Cadbury-Fry depot is by Messrs. Cackett, Burns Dick and Mackellar [*FF*] and the others are by Professor Holford.

success or otherwise in measuring up to standards already understood. A new metaphor of representation, an expression of personal taste, what Bacon called 'some strangeness in the composition', is so often confused with failure to reach those standards. And dullness succeeds.

In the New Towns, moreover, there will be at the start two committees—the local council and the corporation. There is in most cases an overlap of personnel, and eventually the one will merge into the other. But initially a method of close consultation has to be worked out.

Designing calls for a special combination of humility and greatness, if it is to be any degree remarkable. The architect, in particular, has to be humble in his approach to a building problem; the larger the scale the more dependent his position. Once on his own ground, with his programme settled, he can be greatly daring. And there is much to be daring about: not only matters of construction and engineering, but also layout and grouping, landscape treatment, services and equipment, materials, form and colour.

To a far greater degree than the musician or painter the architect is lost without a client; and he is also lost when he is out of touch with his client. This is not simply a question of patronage and of someone to foot the bill; it is a necessary condition of work. He cannot design successfully for an infinite space, though he can deal ingeniously with a cramped one; nor can he meet requirements that are indeterminate. Some points in the client relationship must be fixed, and it makes a considerable difference to the resulting products what those points are.

It was possible, for example, for a landowner to commission a country house and park in the eighteenth century by indicating its site and prospect and a preference for the Palladian manner. A full set of drawings might be approved; sometimes plans and an estimate of cost were sufficient. In an age when taste and influence were carefully measured, little had to be stated because much was implicit. The best agreements governing design are not those which need lawyers to interpret them, but those in which the parties thoroughly understand one another. I do not suggest that in those days there were fewer disagreements than there are now over such matters as alterations, additions and extra costs; there were probably more. But as concerned the guiding lines of the clients' instructions, there can seldom have been much room for doubt.

The position to-day is usually very different. Instead of one owner, building for himself and his descendants, there may be a committee or council, frequently changing in its composition, responsible to electors on the one hand and to Government Departments on the other, as vocal as any economist on the subject of its quantitative requirements, but curiously uncertain what it wants in terms of quality and design. For clients of this description—and they are increasing as private patrons decline in number and wealth—a designer has to work under rather different conditions. In the case of many public companies there is an intermediate agent in the shape of a general manager who interprets the wishes of the Board; in the case of some of the larger local authorities, one or more of the technical officers take on a measure of responsibility for policy and organization as well as for design in a particular field, or else they frankly delegate it.

So it is interesting to consider the New Towns Corporations as clients, and to see whereabouts they stand in this table of consanguinity. They are, of course, bodies corporate with powers to hold and dispose of land, provide services, build, carry on businesses, and do most things that a local authority can do except borrow money otherwise than allowed for in the Act. In that they are appointed to carry out a particular enterprise, and that the number of members is limited to nine, they resemble rather the board of a utility or trading type of corporation, executive rather than regulatory.

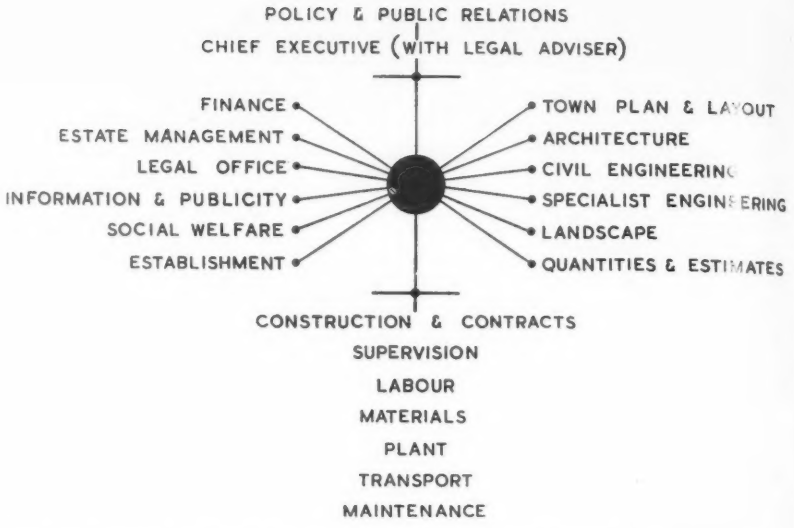
But in practice, because of the limited period and the urgency of development, they must in the early stages build on their own initiative, though with an eye to the benefit of those who come after. They will commission buildings directly and enter into building agreements with private developers; they will thus control design and appearance through covenants in leases; most important of all, they will be contributing capital with a view to a gradual and not necessarily immediate return. In all these matters they resemble the great landlords of the past.

These three aspects of the character of the New Towns Corporations, taken together, suggest that we have in them the contemporary version of the perfect patron. For they are able to take the long view, they are bound to define their programme clearly (both for the Minister's benefit and that of the local authorities and the public), they can afford good technical advice, and best of all in these days of paper planning, they are appointed for the main purpose of getting on with the job.

On the other hand the job itself, both in extent and speed of execution, is greater than most people realize; the material and economic difficulties are formidable, and the number of different requirements that have to be met is almost legion. So a great deal depends on the relations between the policy makers and the administrative and technical officers, and on the internal organization of the staff itself.

Organization of the Executive Machine: There will be many opinions on this matter of organization, and those I offer are no more than tentative conclusions drawn from discussions with individuals and with the central Department, and backed by a certain amount of direct experience of similar but more specialized organizations before and during the war. I also assume that everyone has glanced at, if they have not carefully read, the reports of Lord Reith's Committee on this subject.[7]

The pattern of organization that seems likely to emerge for most of the New Towns is something like this. I must assume a common framework so as to show how the responsibility for design fits into it. But there will, of course, be variations as between town and town, and in any case it is a matter entirely for the Corporations to decide. There must clearly be a sphere of policy-making at the top, which covers a whole number of personal relationships as well—for example, with the local authorities, the departmental offices, and the chief officers of the Corporation.



There must also be a central link between the Board and the office, in the shape of a chief executive officer or director or a general manager, who will need to have expert legal advice at his right hand.

At this point the organization must spread fairly widely, in order to cover a number of different activities which can be broadly grouped again under the twin functions of technique and administration. The former will include financial, estate and welfare management, legal and public relations, and establishment; the latter all the technical operations from town planning and layout, through architecture and civil engineering to detailed subjects such as horticulture and heating systems.

All these technical and administrative functions and requirements have to be gathered together in the process of actual construction, which will involve contracts and supervision, labour relations, plant, material, transport and maintenance.

This pattern can be set out diagrammatically as above.

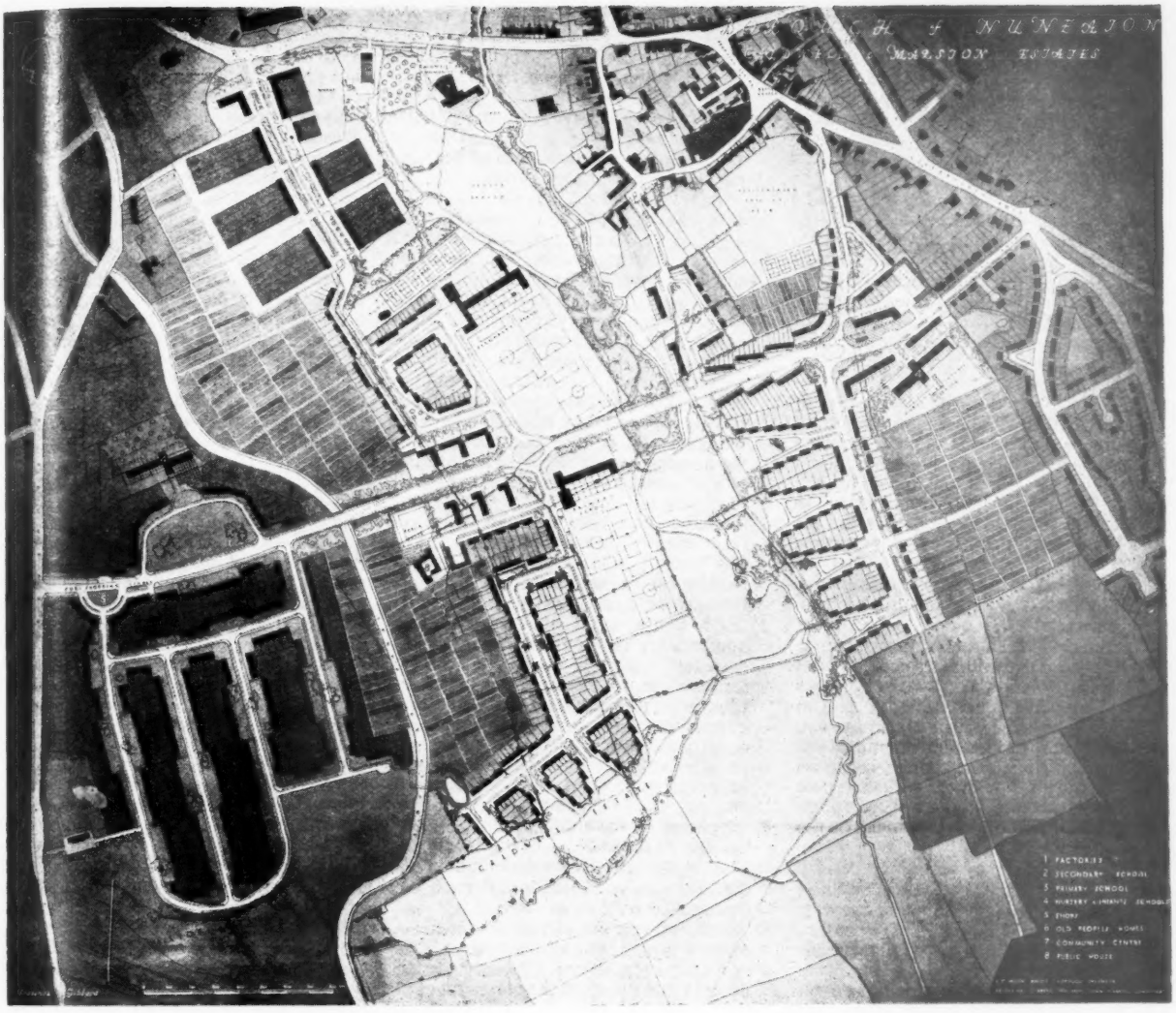
The fusion of programme and design, which is the creative task of physical building, can only take place at the centre of the circle, as a result of innumerable initiatives and reactions on the part of the responsible officers. This is no idle figure of speech, nor is it a formal one. If any of the technical officers ignore the demands of the programme or fail to test out their designs—on a factual rather than an æsthetic basis—with their opposite numbers on the management side, their work will be useless, however ideal it may be in conception. Equally, if the officers concerned with finance, administration or management, fail to draw up clearly the conditions and requirements for the building programme, or having done so impose their own ideas of taste or convention on the designers, the result will be mediocrity or worse.

Conditions of Success: The real issue, it seems to me, in getting good design is to know how to use the designers at every stage of the procedure. They will have to do a lot of listening and considerable asking of questions before they are in a position to do preliminary sketch layouts, then detailed layouts, then small-scale plans of buildings, then contract drawings and quantities. But having reached any stage at which imagination and technical skill can usefully be turned on to a problem, the designers should be given a free hand. The difficulty is that in a complex job of this character they cannot be given a free hand for very long at a time. So it is all the more important that when the opportunity arrives they should be enabled to make the most of it; for every visible item, and many invisible ones, from a theatre to a lighting standard and a power station to an expansion joint in a heating pipe, are contributory factors to the amenity of the town as a whole.

It is often the case in large concerns, that the most constant and fruitful emanation of constructive ideas comes from what I might call the upper-middle section of the drawing office; that is to say from architects and engineers and others who have had enough experience to be familiar with their technique, and are yet young enough to enjoy invention and experiment and to be looking towards Tomorrow rather than Today.

This is the quarter in which the technical side of the New Towns Organization needs to be really strong; and this is the point at which the maximum freedom from the compromises inseparable from planning should be maintained. It is inevitable that the heads of sections and departments, the chief architects and engineers, and the chief technical officers also, if such are appointed, should spend a far greater proportion of their time in negotiation and the organizing of work. They have to co-ordinate designs not only of similar categories but of different types and scales to fit a growing plan; and they have to explain to the client side what the capacity and limitations of a course of action may be in terms

[7] New Towns Committee : First Interim Report, January 1946 : Second Interim Report, April 1946 ; Final Report July 1946. H.M.S.O.



Plans of estates at Nuneaton by Frederick Gibberd [*F*

of three dimensions and whether it will result in greater amenity and convenience.

The whole course of operations, from designation onwards, is governed by the constant interactions of programme on design, and design on programme. For example, as soon as the general location of a new town is determined a preliminary plan of block development, based on overall density figures, has to be worked out. In making this calculation the planner is bound to be influenced by the particular qualities and opportunities of the site, and in order to make the most of these he will suggest the acquisition of more flat land for factories or a wooded park for a school, or even the omission of a large area which could not economically be drained or supplied with water. All this goes down on paper; and it is then the turn of the administrative side to consult the parties affected, and to decide whether and at what cost (not only money cost) these ideas can be put into practice.

Thus a stage is reached ; but it is hardly ever tidily completed. The planner will not, even at this early stage, receive a definite programme. There will be conditions attached, and some decisions will be dependent on the Ministries of Health or Transport or Agriculture, or the Catchment Board or a supply undertaking. They on their side will regard the development simply as a small part of a wider programme for which they are responsible, and they will all have to be convinced that any new proposal which deviates from accepted policy or creates the slightest trouble for them, is not only practicable but worth while. So the planner (who is now possibly more than a single person and is reinforced on the civil engineering side), has to talk over a large number of other technicians and administrators in order to advance the programme to the stage when he can make even the most provisional master plan.

The plan for Stevenage, which was taken through these stages by the Ministry of Town and Country Planning in advance of the setting up of the Advisory Committee and Corporation, shows hardly anything which the layman would call design even yet. There are no groups of houses or suggestions for the height and shape of the civic centre, or the exact position of the shops. But already this master plan represents nine months of negotiations, discussions, and settlements of principle. It is now a basis for design—nothing more ; and one of its greatest virtues is its flexibility within certain fixed limits.

The main designing job is yet to be done, and the time taken to settle even the most essential preliminaries is a measure of the enormous task of execution. I cannot help feeling that that task is underrated by the public generally. It is true that Welwyn Garden City gives an assurance of steady and co-ordinated progress over a period of years; and it is also true that during the war with large staffs, terrific labour forces and absolute priorities, we carried out some

very complex operations equivalent in size and cost to the building of a new town, in periods varying from twelve to eighteen months. From these wartime schemes we gained experience, particularly in organization and in architect-engineer co-operation, but we did not gain any real contributions to the townscapes and landscapes of England and Wales.

We had bigger teams during the war, and greater annual expenditure. But the programmes were easier to define and there was usually only one responsible Department. Apart from services, with which at least a dozen authorities are concerned, the actual construction and maintenance of buildings in New Towns may be in the hands of the Corporation itself, of the exporting housing authorities, the receiving local authority, several Government Departments, or private enterprise. The co-ordination of these different agencies at a time when there will still be severe competition throughout the country for labour and materials, will demand high quality in the technical staff in addition to a sufficiency of numbers. But the most important difference between wartime projects and the New Towns is that the latter will be expected to achieve a distinctive appearance not only in detail but as a whole.

The technical staff required to prepare for and ultimately to supervize a programme for a new town that will at its peak amount to between two and three thousand houses a year, a construction force of 5,000, and an annual building expenditure of perhaps two million pounds, cannot number much less than 100. Even if half the building contracts are let by private developers, with their own professional advisers, the tasks of co-ordination, including that of design, will fall on the Corporation's officers.

For this reason it may be found necessary to have a chief technical officer (in addition to the architects and engineers and surveyors) to lay down certain principles of procedure in regard to design matters, and to be responsible for maintaining them. For the design of the town as a whole is not only a matter of buildings, roads and parks, but also of sub-stations, railway bridges, lighting standards, advertisements and name-signs, water towers, telephone transmission, and a host of other things which may not be the direct responsibility of the Corporation. Someone must discuss all these items with the experts in charge of them, knowing precisely what effect their proposals will have on the plan as a whole. While there is time for reference and sorting out between town clerk, treasurer, engineer or architect in the average local authority's programme, I doubt if that will prove to be the case in the New Towns. But I admit that this is an appointment the need for which will be demonstrated or not as time goes on. It is far more important, now that we stand at the threshold of new town organization, to formulate the general conditions of success for the technical and administrative team. Strong opinions will be held on this subject by many in this room. To set them off, I summarize my own conditions very briefly as follows; you will see that they supplement certain proposals in the Reith Reports:—

1. Insistence by the Corporation on one closely-knit and unified organization for working out the development programme and designing it; parity between technical and administrative officers with equal responsibilities, and the fullest possible information on what is going on, so that the team has a strong sense of personal participation in the adventure.
2. Adoption of a factual method of discussion for all boards, committees, and other meetings at which the client side and the design side are represented. This means the sinking of taste and prejudice in favour of reasoned explanations by the designers as to why they have met a problem in a particular way. Questions of feeling—and even of fantasy on occasion—should be left to the designers, and they should not have to justify designs except on the basis of solving the conditions of the programme. No doubt some of those on the Board or the managerial side will have their hearts in their mouths now and then. Let them! Many a good patron in the past has felt the same, but if they were wise they have taken the risk. In a social programme of this description design sanctions against modernism or traditionalism or functionalism are unnecessary.
3. High quality of technical staff. Two qualities are required in the architects, engineers or surveyors who compose the technical team—a lively ability in design, whether in the architectural, engineering or scientific senses of the term; and enormous perseverance. The last is important, because there will be almost endless modifications of the plans and drawings they prepare, as I have already pointed out.
4. Abolition of the architect-engineer controversy in the interests of the town plan as a whole. The best relations between the members of the technical team are those based on mutual respect.
5. Awareness, on the part of the members of the Corporation and the client side, as well as the technicians, of what is being done in other parts of the country and of the world. The designers are unlikely to produce anything exactly similar to what is going on in Switzerland or Sweden, or the U.S.A.; but ideas are taken up through visits, correspondence, illustrated books and exhibitions; and a client who can compare the advantages of a new design with something already built elsewhere, is a better client in the long run than the insular type who knows only too well what he wants. There is a good deal already to go by, particularly in the case of special buildings such as schools and swimming baths. Great advances can and should be made in new territory also—for example, children's playgrounds, urban walks, shopping centres, car-parking, district heating, and housing for both active and infirm old people.

In conclusion let me stress again the importance of quality. I believe that housing demands in quantity will be very largely met in the next ten years. But the country has the technical personnel and the social institutions that could carry us even further than that.

The country needs architecture in its widest sense; something to live for as well as to live in. And this can only be achieved in a time of material scarcity by brain power and technique and a far-sighted determination to maintain high standards in the New Towns. After all they will be more than urban settlements; they will be in a real sense a memorial of the years we have spent in a very different kind of effort. 'The mass of men,' as Thoreau said, 'lead lives of quiet desperation.' The best way of giving concrete expression to the general raising of the standard of living on which we are all engaged, is to create a few examples that are well *above* the average.

If the New Towns cannot achieve this aim by striking through the eye and the senses to the mind of Britain and the world, I feel certain that no demographic or economic or administrative justification will carry them through.

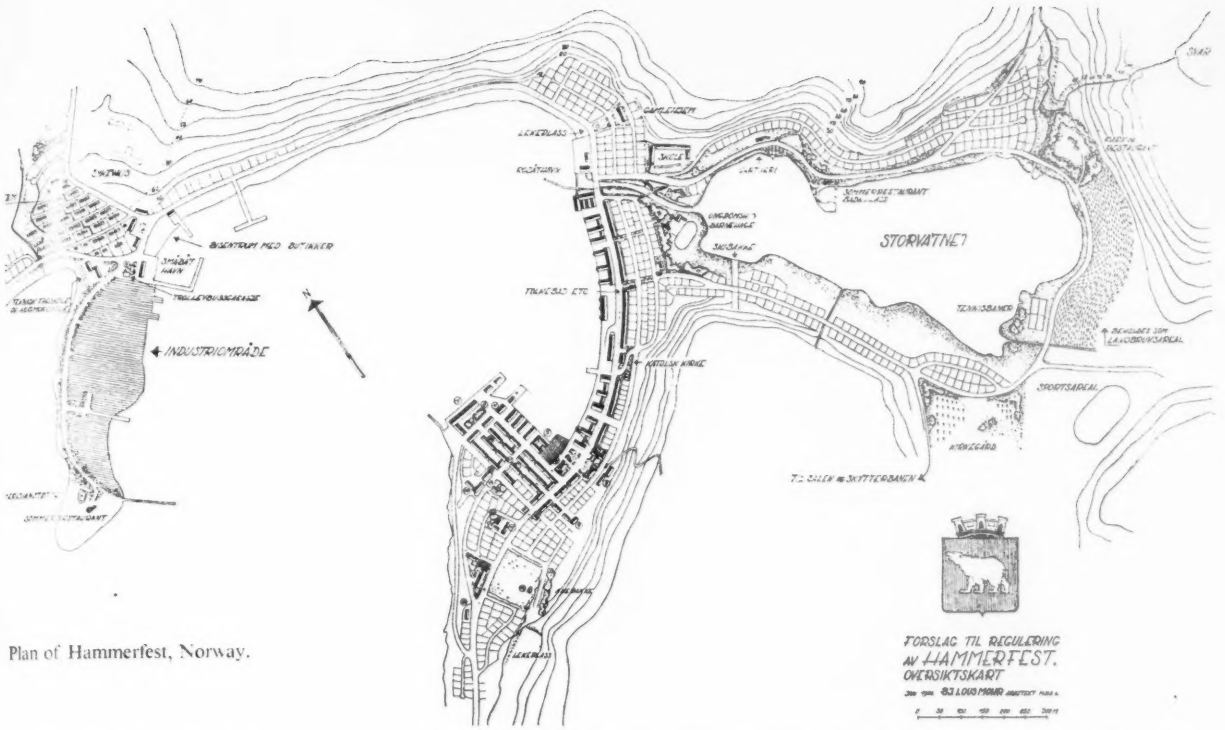
DISCUSSION

The Rt. Hon. Clement Davies, K.C., M.P.: Upon me tonight has devolved the honour and the very pleasant duty of moving on behalf of all of us a very hearty vote of thanks to Professor Holford for his instructive, illuminating and most interesting address. The fact that you are here in such numbers tonight is a compliment and a tribute to his standing, to his reputation and to his learning. It is also a tribute to the interest that you are taking in this great subject.

You and I are fated to live in the most extraordinary period that mankind has yet witnessed. In these last 50 years I have witnessed more changes than our ancestors witnessed for centuries, and one of the most interesting changes that is taking place is that we are now beginning to realize that the use of land in this small country of ours should be confined to that which is best in the interests of the community as a whole. No longer can a man act entirely without regard for his neighbours.

My predecessors in Parliament and at law seemed to have regard only for one particular nerve of men and women—the olfactory nerve. The common law did give you the right of action against your neighbour if he committed a nuisance which was offensive to your nose; but your neighbour could put up any kind of atrocious building he liked and nobody seemed to bother or mind in the slightest degree. It has been rather extraordinary that throughout all these centuries where you have the most beautiful land and some very fine examples of beautiful architecture, nevertheless some of the greatest atrocities to be found anywhere have been permitted.

At long last we are beginning to change. It is only within the last few years that we have thought about planning, and it is rather significant—I know it is a coincidence because none of us knew what was to be the work for the morrow until the leader of the House announced it last Thursday morning—that you are hearing this lecture tonight on the eve of the debate in the House upon a comprehensive Town and Country Planning Bill. To-



Plan of Hammerfest, Norway.

morrow we will debate that Bill. On the whole I think you will find a complete agreement, at any rate, about the necessity for some such bill. There may be quarrels about certain things, but that it is right the land should be put to its best use in the interests of all—on that I am certain we are all in accord.

During this last hundred and fifty years our population has sprung up from something under 9,000,000 to something over 45,000,000, and during the whole of that time nobody seemed to mind very much what happened with regard to the people. We have had this extraordinary growth of what are called industrial centres and cities. Even a hundred and fifty years ago there were some men who condemned them. Dear old Cobbett very rightly referred to London as a 'wen' but I wonder what he would have called it today with its extraordinary sprawl, the way in which people have congregated together, and the long journeys they have to make in the early morning and again at night when they are weary after their day's work.

The problem facing you here in London is the greatest problem that is facing any part of Britain. It is going to be a real difficulty to replace some million people and more in surroundings and circumstances which will be more comfortable for them and their families.

I have found that everybody agrees with the fact that there is a necessity for new towns. Everybody agrees upon the general outline and the general plan of the new towns, but whenever you suggest that the new town should come near them they say: 'No; take it somewhere else'! That is undoubtedly one of the difficulties we shall have to face.

Might I urge upon you as architects the need for great patience, because, as Professor Holford told you, not only will you be dealing as in the past with the individual owner, but you will be dealing with councils and committees, and your experiences in the past with councils and committees have not always been too helpful. Two instances of that are two buildings where I have to spend so much of my time. They are draughty, uncomfortable and difficult buildings, namely, the Royal Courts of Justice and the Houses of Parliament where the architect was not asked to do what he, with his knowledge and experience thought was best, but had to obey the layman interfering and, as Professor Holford said, determined to show that he could have what he desired. You will have to exercise great patience but it will be all to the good.

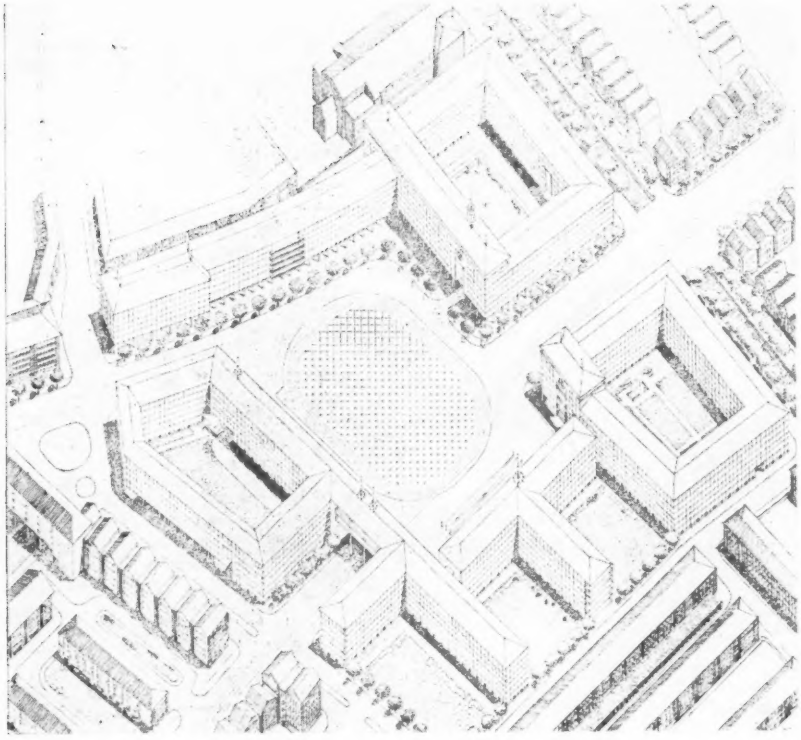
I do hope that we shall have flexibility, not too much infilling at the outset but plenty of room for new ideas to come in and, above all, variety. Beauty lies in variety, and so it will be with regard to these new social centres. After all, it is good to have a change of scenery, and you architects will have an opportunity not only of exercising your skill, but you will be given permission to exercise to the full your imagination for the benefit of the people of this country.

On behalf of us all I want to move a most hearty and cordial vote of thanks to Professor Holford for his splendid address.

Lt.-General Sir Wilfrid Lindsell, G.B.E., K.C.B., D.S.O., M.C. (Chairman of the Crawley New Town Advisory Committee): I regard myself as very privileged to be allowed to second this vote of thanks. The art of town planning has now become an essential part of the development of our social system. We have today a host of enthusiastic amateurs who know very little about the technique and a much smaller number of real experts, of whom this Institute is one of the providers for the future. All of us, amateurs and professionals alike, who are assembled in large numbers here this evening are more than grateful for the most valuable and interesting addition to our knowledge of the subject to which we have been privileged to listen. I have the greatest pleasure on your behalf of seconding this vote of thanks to Professor Holford for his admirable lecture this evening.

Sir Ernest Gowers: It was not my intention to say anything because Professor Holford has given us a very great deal to think about and, for myself, I should have liked a great deal more time to think about it before I made any comment. However, I cannot resist the invitation to get up and say, speaking for myself as a chairman of a new towns corporation and, I am sure, everyone present, how much we have benefited from Professor Holford's address.

I was conscious before that I had rather readily committed myself to a task which I knew was of colossal public importance, but perhaps of which I did not quite realize the gigantic dimensions. I have learned a great deal from Professor Holford and there are many things I shall remember, but one thing which particularly stands out in my



Perspective of part of the town-planning scheme for Gravenhage, a satellite of Rotterdam, by W. M. Dudok [*Hon. A*].

mind is the warning about the danger of the layman interfering in the question of design and having his own ideas on that difficult subject! I should like to assure Professor Holford that that has sunk in!

Mrs. Monica Felton: I speak with some trepidation in view of the close proximity of the planner of Stevenage, but I am also impressed by what Professor Holford has said about the relationship between people like myself, the clients, and the planners who are all around us. We of the Stevenage Corporation do feel that while we have to give our planners the maximum freedom, they have the great responsibility of educating us. Some of us have been brought up with such doctrines as eight houses to the acre and other doctrines such as that terrace development is a bad thing which must not be seen in new towns. Planners have different views on these subjects, and we do all hope that they will realize that the first essential of collective responsibility to the community is to educate the members of the corporations.

Sir Thomas Bennett [*F*]: Professor Holford has rightly stressed the fact that a great many people have not yet realized the extraordinary magnitude and complexity of the design of an entirely new town in an extremely short space of time. It comes at a time when a great many people responsible for operating the components of the town are quite undecided as to the method of operation or even the size and distribution of the buildings. The breweries are endeavouring to decide upon the best method of distributing public houses and their relative sizes. The retail shopkeepers are a long way from knowing whether they want their shops close together in a centre or widely distributed, covered with canopies or left open to the air. The educationalists are only at the very beginning of a complex programme of education. The cinema proprietors are not quite decided as to whether their cinemas should be distributed in a large number of small cinemas or a small number of large ones, and almost the same applies to all the other major activities which the new towns are asked to decide immediately. Therefore, what we have heard tonight about the need for corporations and planners to endeavour to work in such harmony that they co-relate these things really quickly and make up other people's minds as well as their own, is only one indication of the magnitude of the task. We are greatly indebted to Professor Holford for pointing out that gigantic fact.

Mr. Donald McMorran [*F*]: I do appreciate the need for speed in this work, but I should like to say a word in favour of architectural competitions in these towns. I realize that these plans will not be successful unless requirements are quickly laid down, at the same time I do feel, when the preparatory work has been done and a programme clearly established, that there might be competitions held, if not for the whole of the town, at any rate parts of it.

Sir Charles Reilly [*F*]: May I say what great pleasure it gives an old man to find that the first holder of the Liverpool Chair of Architecture and Civic Design should be here tonight giving such a clear and comprehensive view of the requirements of this great problem.

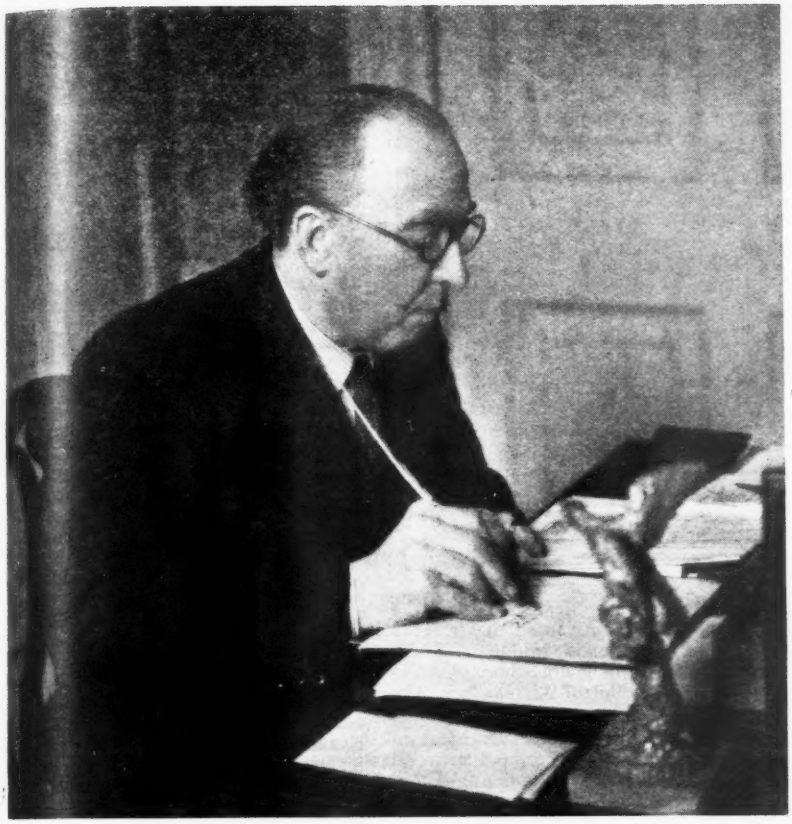
Professor Holford: I should like first of all to thank the various speakers for their remarks. We have had the chairmen of two of the new towns corporations, Crawley and Harlow, and the Deputy Chairman of Stevenage here with us tonight, and we have also had a few words from Sir Thomas Bennett who probably knows more than most people about what the organization of a big job involves.

A point was raised by Mr. McMorran on the question of competitions, and in that connection I only wish to say that in my humble opinion it will only be for particular buildings or groups of buildings that competitions can satisfactorily be held in the new towns, because the first problem, and one which is very difficult to settle, is the condition of the competition and the exact requirements that the competitors will have to meet. Until you have that I do not think it is worth while getting a lot of people to spend a great deal of time in doing competition drawings. However, I entirely agree that when that stage is reached at any point, there should always be an opening for the man who has an idea and who wants to put it out through the age-old system of the architectural competition.

Finally, I should like to thank Sir Charles Reilly and to say to him, to Mrs. Felton, to Sir Ernest Gowers, and to Sir Wilfrid Lindsell that what I have said tonight I hope will be taken in the sense not of a threat but a promise!

The next General Meeting at the R.I.B.A. 11 March, 6 p.m. 'HOUSING AND THE ARCHITECT' Mr. J. H. Forshaw, M.C., M.A., B.Arch (Lvpl) [*F*], Chief Architect, Ministry of Health.

Synopsis: The paper deals with present aims and gives a picture of limitations imposed by present abnormal circumstances. Achievements between the wars are discussed, and a survey made of the factors, both cultural and material, which lead to developments in the factory-made house. The effect of the Housing Manual's recommendations, with particular relation to future developments in town and country. The local authority as the major client of the profession. The architectural opportunities in the future, particularly in recognition of the architect's skill in the development of layout and amenity. New towns as examples of comprehensive construction, including new housing and on a scale demanding a high degree of architectural skill. Aspects and problems of layout. The interest of the Minister and Ministry in upholding and improving standards. The importance of domestic architecture and its standards in relation to national problems.



The Royal Gold Medal

Professor A. E. Richardson

R.A., Hon. M.A. (Cantab). F.S.A.[*F*]

HIS MAJESTY THE KING, on the recommendation of the Council of the Royal Institute, has awarded the Royal Gold Medal for 1947 to Professor Albert Edward Richardson [*F*]. The medal is conferred annually on a distinguished architect or man of Science or Letters, who has produced work advancing the knowledge of architecture.

Professor Richardson is well known to his brother architects as a teacher of architecture, as a practising architect and as a writer. Beginning to teach architecture in 1900 at the age of 20, he was Professor of Architecture in the University of London from 1919 until recently, when he was appointed Director of the Royal Academy School of Architecture. In his practice he has been responsible for a wide range of buildings including, amongst others: St. Margaret's House, a block of offices and showrooms in Wells Street, London; the Jockey Club, Newmarket; the Royal Pavilion at Ascot, and the Church of the Holy Cross at Greenford, noted for its fine timber roof and completed in 1941. For more than 10 years he was engaged on the repairs of the Bedfordshire churches, and he rebuilt the church at Eaton Socon. Between 1939 and 1941 he designed and superintended the building of the North London Collegiate School. Professor Richardson's most notable work was done in connection with some of the additions to University College in Gower Street. In 1931 the London Architecture Bronze Medal was awarded for St. Margaret's House which was designed while he was in practice with Mr. C. Lovett Gill [*F*]. For the past five years he has been engaged on a plan for the complete re-modelling of University College.

He was elected a Fellow in 1913, and was a Vice-President for 1937-38. He was elected Associate of the Royal Academy in 1936, and Royal Academician in 1944. During the time he resided at St. Catherine's College, Cambridge, he was elected to an Honorary Fellowship. He is a member of the Royal Fine Art Commission, and Deputy Chairman of the Georgian Group, being particularly interested in late Georgian work, on which subject he is an expert. He has been Master of the Art Workers Guild, and is Chairman of the Friends of the City Churches. He lives in a lovely eighteenth-century house at Ampthill, filled with a magnificent collection of furniture of the same period.

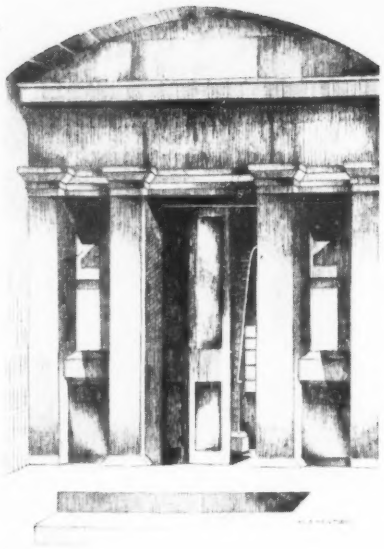
Professor Richardson's best known books on architecture are: *Monumental Classic Architecture in Great Britain and Ireland during the Eighteenth and Nineteenth Centuries; Georgian England; Old Inns of England; The English Inn, Past and Present*, and with Professor Hector Corfiato—*The Art of Architecture*. Under the editorship of G. M. Young, Professor Richardson was also responsible for *Victorian England*. In addition, he has also written a large number of articles on architecture, particularly for the R.I.B.A. JOURNAL.

Professor Richardson's writings published in the R.I.B.A. JOURNAL include a Sessional Paper on *Railway Stations* (8 May 1939); articles on *Architects' Drawings* 1800-51; *Architecture from the Structural Point of View; The Clock of St. Dunstan's Church, Fleet Street; Elements of Design and the Teaching of Building Construction; Gothic Revival in the Early Eighteenth Century; The Royal Barge (Kent's drawings); Some Early Drawings of Professor C. R. Cockerell, University of London School of Architecture*, and obituary appreciations of Sir Lawrence Weaver and Sir Herbert Baker.

The Royal Gold Medal for the promotion of Architecture was instituted by Queen Victoria in 1848 and has been continued by King Edward VII, King George V, King Edward VIII and by his present Majesty, King George VI. Although the medal was instituted 100 years ago, Professor Richardson is the 98th recipient because the medal was not awarded in 1901, owing to the death of Queen Victoria, nor in 1924. The Royal Gold Medals for the war years will be presented at a General Meeting on Tuesday 15 April at 6 p.m. These were awarded to: C. F. A. Voysey (1940), Frank Lloyd Wright (1941), W. Curtis Green (1942), Professor Sir Charles Reilly (1943), Edward Maufe (1944), Victor Vesnin (1945), Professor Sir Patrick Abercrombie (1946). This unprecedented event will doubtless attract a large attendance of members and guests.

R.I.B.A. Prizes and Studentships

List of Awards 1947



One of the sketches by Mr. Ian D. McIntosh, the High School, Dundee, for which he was awarded a prize of £2 2*s*.

AT A GENERAL Meeting of the Royal Institute of British Architects held on 14 January the Council's Deed of Award giving the results of the competitions for the Annual Prizes and Studentships awarded by the R.I.B.A. was read, and a criticism of the work submitted was given by Mr. Anthony Minoprio, M.A. [*F*]. There were in all 287 competitors. The total value of the Prizes and Scholarships offered by the R.I.B.A. is over £3,000 a year.

The results of the various competitions are as follows :—

The Tite Prize: A Certificate and £35 for the Study of Italian Architecture. The subject set for this year was 'A Monastery'. One hundred and fifty-three candidates took part in the Preliminary Competition of whom nineteen were admitted to the Final Competition.

The Prize was awarded to Miss Esmée Mabel Struan Cousin [*S*], Kinnoul, Kilmacolm, Renfrewshire. (Glasgow School of Architecture.)

A Certificate of Honourable Mention was awarded to Mr. Edmund Charles Tory, 18 Osberton Road, Oxford. (Department of Architecture, City of Oxford School of Art and Crafts.)

The Victory Scholarship and £120 for the Advancement of Professional Education. The subject set this year was 'A National Theatre'. Fifty-one candidates took part in the Preliminary Competition of whom twelve were admitted to the Final Competition.

The Scholarship was awarded to Mr. Frank Booth, Dip. Arch. (Leeds), A.M.T.P.I. [*A*], 1 Hollin Lane, Headingley, Leeds, 6. (Leeds School of Architecture.)

A Certificate of Honourable Mention was awarded to Mr. Richard Walter Leggatt, M.C. [*A*], c/o D. A. Wilkie, Esq. [*F*], 45 Chancery Lane, W.C.2. (Department of Architecture, Southern College of Art, Portsmouth.)

The R.I.B.A. Silver Medal for Measured Drawings and £75. Awarded to Mr. Fred Potter [*A*], 'Broadlands', Middleton Road, Bromsgrove. (Birmingham School of Architecture, and School of Architecture, The Polytechnic, Regent Street, London.)

A Certificate of Honourable Mention was awarded to Mr. Colin Fleetwood Walker [*S*], 91 Hagley Road, Edgbaston, Birmingham, 16. (Birmingham School of Architecture.)

Six sets of drawings were submitted.

The Royal Institute Silver Medal and £50 for an Essay. Awarded to Mr. Gavin Walkley, M.A., M.Litt. (Cantab.), B.E. (Adelaide) [*A*], 150 Alexandra Avenue, Toorak Gardens, South Australia. (School of Architecture, The University, Adelaide, and Cambridge University School of Architecture) for an Essay entitled 'William Wilkins, R.A.'.

Eight essays were submitted.

The Banister Fletcher Silver Medal and £26 5*s*. for the Study of History of Architecture. The subject set for this year's competition was 'Terrace and Square in the English Tradition'.

Awarded to Miss Ruth Pocock [*S*], 37 Doughty Street, London, W.C.1. (Bartlett School of Architecture, University of London.)

Seven essays were submitted.

The Alfred Bossom Research Fellowships £200: for Post Graduate Research. Awarded to Mr. David William du R. Aberdeen, B.A. (Arch.) [*F*], 18 Upper Grosvenor Street, London, W.1. (Bartlett School of Architecture, University of London.)

Six applications were received.

The Neale Bursary: £100 for the Measurement of Old Buildings. Awarded to Mr. Maurice Ewan Taylor, M.T.P.I. [*A*], 10 Howard Place, St. Andrews, Fife. (School of Architecture, The Polytechnic, Regent Street, London.)

Three applications were received.

The Hunt Bursary: £75 for the Encouragement of the Study of Housing and Town Planning. Awarded to Mr. Arthur Neville Ward, B.Arch. (Hons.) (Lvpl.) [*A*], 83 Harcourt Terrace, London, S.W.10. (Liverpool School of Architecture, University of Liverpool.)

Two applications were received.

The Athens Bursary: £125 for Study at the British School at Athens. Awarded to Mr. Wallace Padfield Hunt, A.M.T.P.I. [*A*], Donner House, Oak Drive, Fallowfield, Manchester, 14. (School of Architecture, University of Manchester.)

The Ashpitel Prize, 1946. At the time of going to press it was not possible to announce the name of the winner of the Ashpitel Prize for 1946 owing to the examination results not being yet announced. The Ashpitel Prize is one of books, value £20, and is awarded to the candidate who, taking the Final Examination to qualify as an Associate, has most highly distinguished himself among the candidates in the Final Examinations of the year.

The R.I.B.A. Silver Medal and £5 in Books for Students of Schools of Architecture recognized for exemption from the Final Examination. Awarded to Mr. Henry Sinclair Wood [*S*], School of Architecture, Edinburgh College of Art, Lauriston Place, Edinburgh. (School of Architecture, Edinburgh College of Art.)

The R.I.B.A. Bronze Medal and £5 in Books for Students of Schools of Architecture recognized for exemption from the Intermediate Examination. Awarded to Mr. Ian Scott Melville [*S*], Strathdoon, Heswall Avenue, Bebington, Cheshire. (Liverpool School of Architecture, University of Liverpool.)

The Archibald Dawnay Scholarships: of the value of £65 for the Advanced Study of Construction. Awarded to Mr. David Wyndham Fletcher [*S*], 4 St. John's Place, Whitchurch, Cardiff. (Welsh School of Architecture, The Technical College, Cardiff.)

The R.I.B.A. Henry Jarvis Studentship at the School of Architecture, The Architectural Association: £50. Awarded to Mr. Frank Stewart Knight [*S*], 13 Market Place, Wincanton, Somerset.

The R.I.B.A. Howard Colls Travelling Studentship at the Architectural Association: £15 15*s*. Awarded to Mr. Hugh Cameron Morris, Coldharbour, Marlow, Bucks.

The R.I.B.A. Donaldson Medal at the Bartlett School of Architecture, University of London. Awarded to Mr. Gordon Eric Rothen [*S*], Manor Farm, Owlswick, Aylesbury, Bucks.

The R.I.B.A. (Anderson & Webb) Scholarship at the School of Architecture: Cambridge University: £65 per annum. Awarded

to Mr. G. J. Shipman, School of Architecture, Cambridge University.

The R.I.B.A. Prize for Art Schools and Technical Institutions with facilities for the Instruction of Intending Architects (£5 in Books). Prizes of £2 10*s.* in books awarded to Mr. Joseph Charles Hadfield (Probationer), 5 Beech Avenue, Pendleton, Salford, 6. (School of Architecture, Manchester Municipal School of Art); and to Miss Barbara Valerie Watt [*S*], 7 Hunton Bridge Hill, King's Langley, Herts. (Department of Architecture, Medway School of Art and Crafts, Rochester.)

The R.I.B.A. Prizes for Public and Secondary Schools. These Prizes are of a total value of £10 10*s.* For the competition for 1946-47 an additional prize was awarded. This prize consisted of a case of instruments which had been presented by Mr. E. M. Joseph [*F*]. They are offered for an Essay of not more than 1,000 words or for sketches or scale drawings of a building or part of a building. The Prizes are offered for competition between boys and girls in Public and Secondary Schools.

The Prizes were awarded as follows:—

Essays.—A Prize of £4 4*s.* to R. G. Harris, of Perse School, Cambridge, for his essay on 'King's College Chapel'. A Prize of £1 1*s.* to Miss Rosemary I. K. Booth, of Forfar Academy, for her essay on 'Local Architecture'.

Sketches.—The Special Prize of a case of instruments to Sydney B. Downs, of the Manchester Grammar School for his drawings of Chorley Hall, Alderley Edge, Cheshire. A Prize of £2 2*s.* to Ian D. McIntosh, of the High School of Dundee, for his drawings of the High School of Dundee. A Prize of £2 2*s.* to D. G. Batchelor, of the Grammar School, Loughborough Rd., West Bridgeford, Nottingham, for his drawings of Southwell Minster. A Prize of £1 1*s.* to D. F. Clayton, of Rugby School, for his drawings of the School House, Rugby.

There were no entrants or applications for the **Owen Jones Studentship: a Certificate and £100** nor for the **Arthur Cates Prize: £100.** The Council's Deed of Award read at the Meeting was signed by: Sir Lancelot Keay, President, Mr. T. Cecil Howitt [*F*], Mr. Ralph Tubbs [*A*], Mr. A. Leonard Roberts [*F*], Hon. Secretary, and Mr. C. D. Spragg, Secretary, R.I.B.A.

Review of Work submitted for the Prizes and Studentships by Anthony Minoprio, M.A. [*F*]—Being extracts from the Official Criticism of the Designs at a General Meeting of the Royal Institute of British Architects, 14 January 1947

IN VIEW OF the lapse of time since the R.I.B.A. Prizes and Studentships were last held it may not be out of place if I remind you briefly of the history of these competitions. It was about 110 years ago, in 1836, that the R.I.B.A. laid the foundations of its great prize system by offering an award for an essay. Since that time a succession of new prizes for the encouragement of architecture has followed, some for students, others for qualified architects, some founded by the Royal Institute itself, and others through the bequests of private benefactors. To such an extent has the system developed that by 1939 the average annual value of the prizes and studentships had risen to £1,800 and the number of competitors to 400 annually. In 1946, no less than 14 prizes or studentships have been offered for competition.

The educational value of the prizes and studentships has been recognized by the architectural profession, and the many distinguished names which appear in the list of prize-men are surely proofs of the encouragement to architectural talent and scholarship which the system has to offer. The prizes cover a wide range of subjects and at least ten of them are worth £100 or more. All of them have considerable prestige value and many provide the winners with an opportunity to travel abroad and enrich their experience by study of the greatest buildings of the Old and New Worlds.

Of all the competitions, the design prizes are those which attract the largest number of entries, the average entry before the war being over 200 for the Tite Prize and over 100 for the Victory Scholarship or the Soane Medallion. In 1892 the Royal Institute initiated the practice of inviting one of its members to deliver a criticism of the various drawings and to comment upon the awards. I should like to say how deeply I appreciate the honour of being appointed to act as your Critic on this occasion.

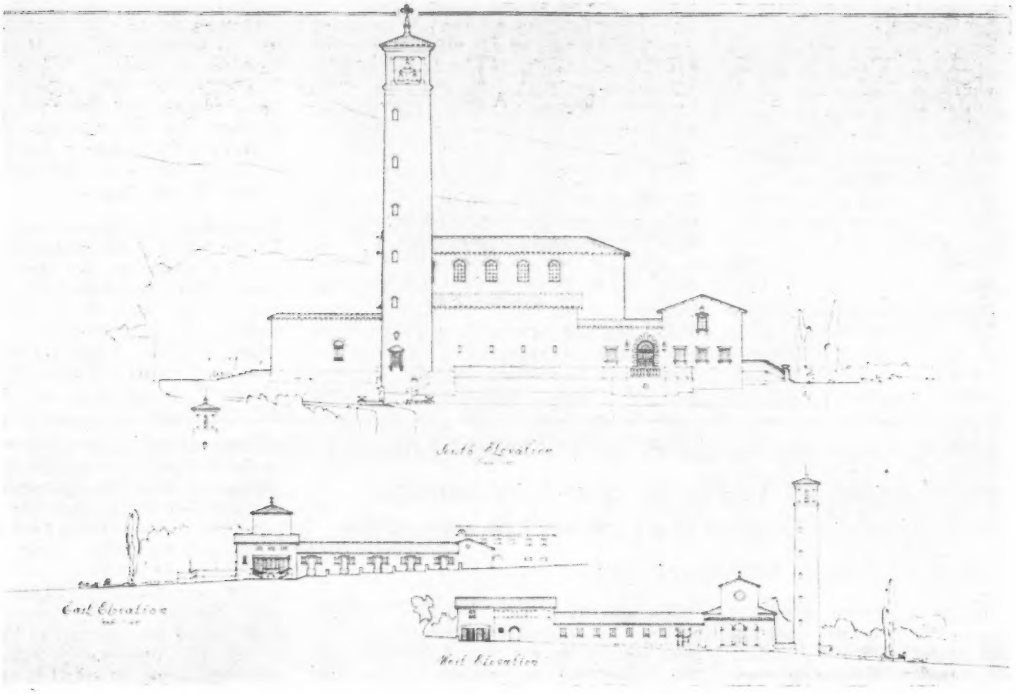
The success of the competition system in England is undoubtedly due to good organization by the Royal Institute and the widespread recognition by the profession that competitions are a first-rate way of gaining experience. But to profit by your mistakes, you must know where your design has failed. When you have burnt the candle at both ends and worked on a scheme for many weeks, it is depressing, to say the least, to find that your design has not even been mentioned in the assessors' report. In the R.I.B.A. prize competitions, the critic not only gives his own commentary on the awards but passes on to the competitors the views of the juries.

It must be obvious that no critic would have the time to study every drawing, to read every essay or thesis, to examine all the evidence submitted by every candidate, with the care which is devoted to these tasks by the juries. Nor would any one person possess the technical qualifications and experience required to pronounce judgement on such a variety of subjects. It follows that in many cases the critic must depend upon members of the juries for the commentaries which he will make and I should like to thank the various juries for the great assistance they have given me in this way.

The duty of a critic is to criticize, but I want to make it clear to any competitors who are here tonight that my remarks are made in the hope that they will be helpful. In my opinion everyone who has entered for a competition is worthy of praise for that reason alone. I hope to comment on as many of the designs as possible, and I would ask those in my audience who have not taken part in the prize competitions to bear with me, and to remember that my remarks this evening are mainly addressed to the competitors.

To take the junior prizes first, the Tite Prize was first offered in 1876 for the study of Italian architecture and is open to those of Intermediate standard within the Empire. In the 70 years of its history it has become customary in this competition for designs to be submitted in the styles of architecture prevalent in Italy in the 14th to 17th centuries, although it has never actually been laid down by the Board of Architectural Education that this is obligatory. In recent years the students of certain schools of architecture have abstained from entering for the Tite, presumably because they feel that they would be asked to take part in a useless archæological adventure bearing no relation to their school training or to the practice of architecture today. I think this is a mistake. The subjects set are sensible and provide most valuable exercises in architectural design. No one is asked to plan a Cinque-cento airport or a seventeenth century bus station! But the programmes do call for skill in planning and composition, for appreciation of scale and architectural character, for landscape gardening, and the application of sculpture and the other arts. Not only that—the winner will go to Italy and I'm sure that not even the most advanced school of architecture would regard that uplifting experience as a waste of time.

In 1946 there were 153 entries for the Tite. The subject set for the Preliminary Competition was a Campanile to be built by the Allies in the reconstruction of an Italian town. The authors of nineteen designs were selected to proceed to the Final Competition, the subject for which was a Monastery. This title was announced four months before the final 'en loge', so that competitors could study the normal requirements. The monastery was a small one, to be built in the Apennines as the summer retreat of the monks from a larger monastery in the valley below. The approach road ran east and west along the southern edge of the gently rising site. The interior communications were to be by means of open cloisters and the building was to be planned mainly on one floor. The accommodation included a chapel, refectory, library and common room, ten cells for monks, three cells for lay brothers who would manage the service, sick rooms, visitors' rooms, garage and outbuildings. An important point was the separate entrance



The Tite Prize. Winning design by Miss E. M. S. Cousins [*S*]. The elevations.

to the chapel for the use of the public, the approach to which should not encroach on the privacy of the monks.

There seem to me to have been three main problems to be solved in this programme. First, the planning problem of arranging the rooms conveniently for the monastic life, handling the approaches and particularly the separate public entrance to the chapel, screening the outbuildings and so on. Second, composing the buildings satisfactorily so that they look well from the valley and approach road. Third, giving the monastery an appropriate architectural character.

The monastery was a summer retreat only, and the buildings should therefore not be elaborate or ostentatious. Its main elements were low buildings around a cloister, a taller chapel and a campanile. The jury hoped to find these three elements pleasantly composed, appropriately detailed and finely presented, but no competitor satisfied all three requirements. Some produced fine drawings but involved plans; others failed to make a satisfactory composition or to express the character of the building.

Presented in ink line without washes or shadows, the winner's three sheets are at first sight unimpressive. Her scheme consists of a well-proportioned cloister with the chapel along one side and a detached campanile. Though less exciting than the others her design is a well-balanced solution free from serious faults. Her plan is the best ; the scale of the design is about right, the elevations have an appropriately simple character and the layout is sensible. The scheme is, in fact, to a much greater degree than the others, the sort of monastery which you might build. I don't think the elevation of the library is very satisfactory; this room might have been better at the other end of the cloister. Her design is not quite up to the standard of previous Tite Prize winners nor is her presentation as good as several others, though her draughtsmanship is sensitive and the jury liked the esquisse.

I am not convinced that the winner is better, architecturally speaking, than her four nearest rivals, but in this competition she is the winner because of her firmer grasp of the essential requirements. I congratulate her and hope she will thoroughly enjoy her visit to Italy.

On the whole the result of the Tite Prize competition was disappointing and the standard rather lower than usual. There was no outstanding design and the jury had some difficulty in selecting the winner.

The next of the junior prizes is the Banister Fletcher Essay Prize, a Silver Medal and 25 guineas, confined to Probationers and elected Students. The subject was 'Terrace and Square in the English Tradition' and there were seven entries. The jury report that the general standard was not high and in only a few cases was the treatment at all imaginative. A mere review of the history of squares and terraces seasoned with superlatives—and most of the essays were nothing more than this—does not necessarily make interesting reading. The winner was Miss R. Pocock [*S*] whose essay was enterprising and well written. She adopted a definite point of view, which she explained with considerable vigour, if not always with perfect clarity.

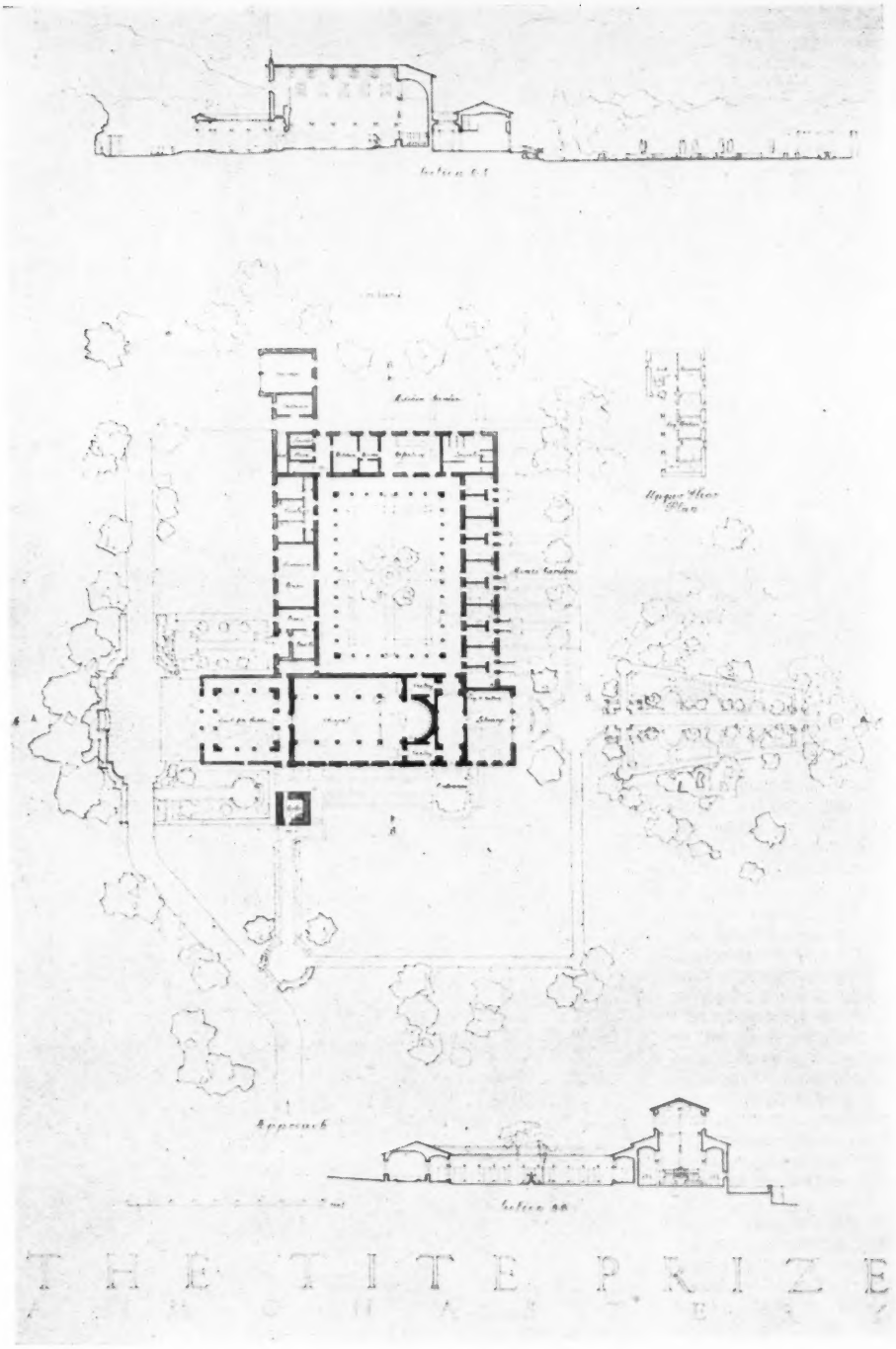
The R.I.B.A. Prizes for boys and girls in Public and Secondary Schools are given for an illustrated essay of not more than 1,000 words and for sketches or scale drawings of a building drawn from the original. R. G. Harris of Perse Boys' School, Cambridge, won the first prize for an excellent and mature essay on King's College Chapel. His sketches were good, the final sonnet a remarkable piece of work and his entry was only marred by his careless handwriting. Miss Rosemary Booth of Forfar Academy was placed second with a compact, clearly argued and well-illustrated essay on the Architecture of Aberdeen.

For measured drawings the special prize of a case of instruments goes to Sydney B. Downs of Manchester Grammar School for a competent set of measured drawings with excellent plottings sensitively drawn. D. F. Clayton of Rugby School gets the second prize for his six sheets and his industry.

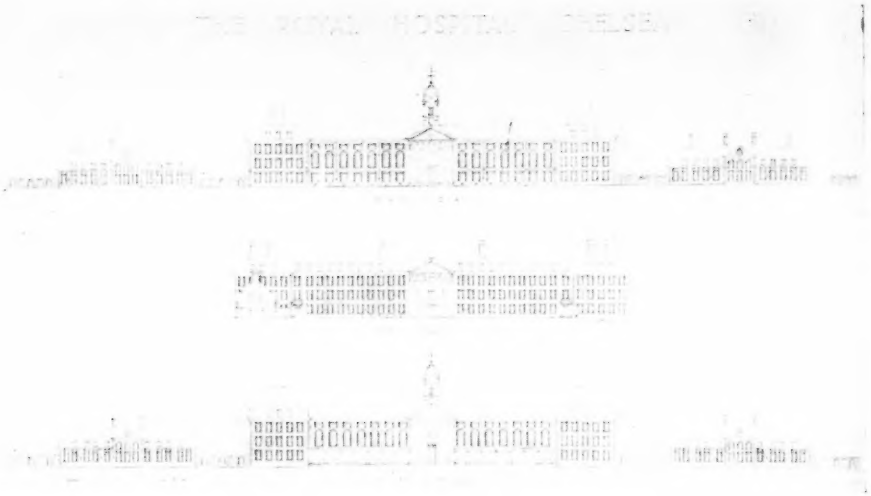
In the Sketches' class prizes were awarded to D. G. Batchelor of the Grammar School, Nottingham, whose technique suggested the illustrator more than the architect, and to I. D. McIntosh of the High School of Dundee, whose drawings showed an architectural and more personal approach.

A. J. Bleasby of the County High School for Boys, Leyton, was awarded an Honourable Mention in this class. The jury considered that the entry of drawings in this competition reached a high standard. I hope the Royal Institute will do all it can to encourage entries for these Prizes from the Public and Secondary Schools.

The Measured Drawings Prize is open to any member of the profession, of any nation-



THE TITE PRIZE. A Certificate and £35 for the study of Italian Architecture. Plan of the winning design by Miss E. M. S. Cousins [*S*] of Kinnoul, Kilmacolm, Renfrewshire (Glasgow School of Architecture).



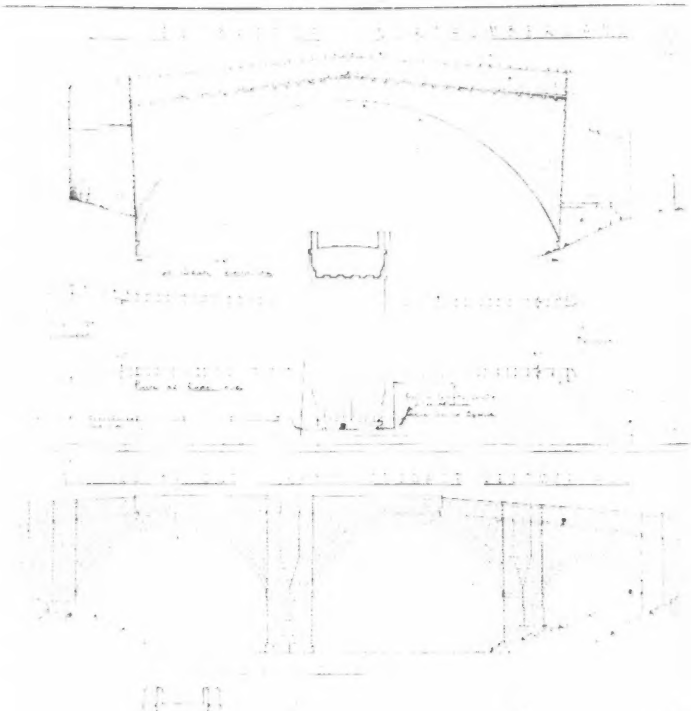
The R.I.B.A. Silver Medal for Measured Drawings and £75. One of the five drawings submitted by the winner, Mr. Fred. Potter [*A*], of Bromsgrove (Birmingham School of Architecture and School of Architecture, the Polytechnic, Regent Street, London).

ality, and six entries were received. Mr. Fred Potter [*A*] was awarded the Silver Medal and £75 for an excellent survey of Chelsea Hospital. The note book plottings are first class and the strainers themselves models of straight-forward draughtsmanship.

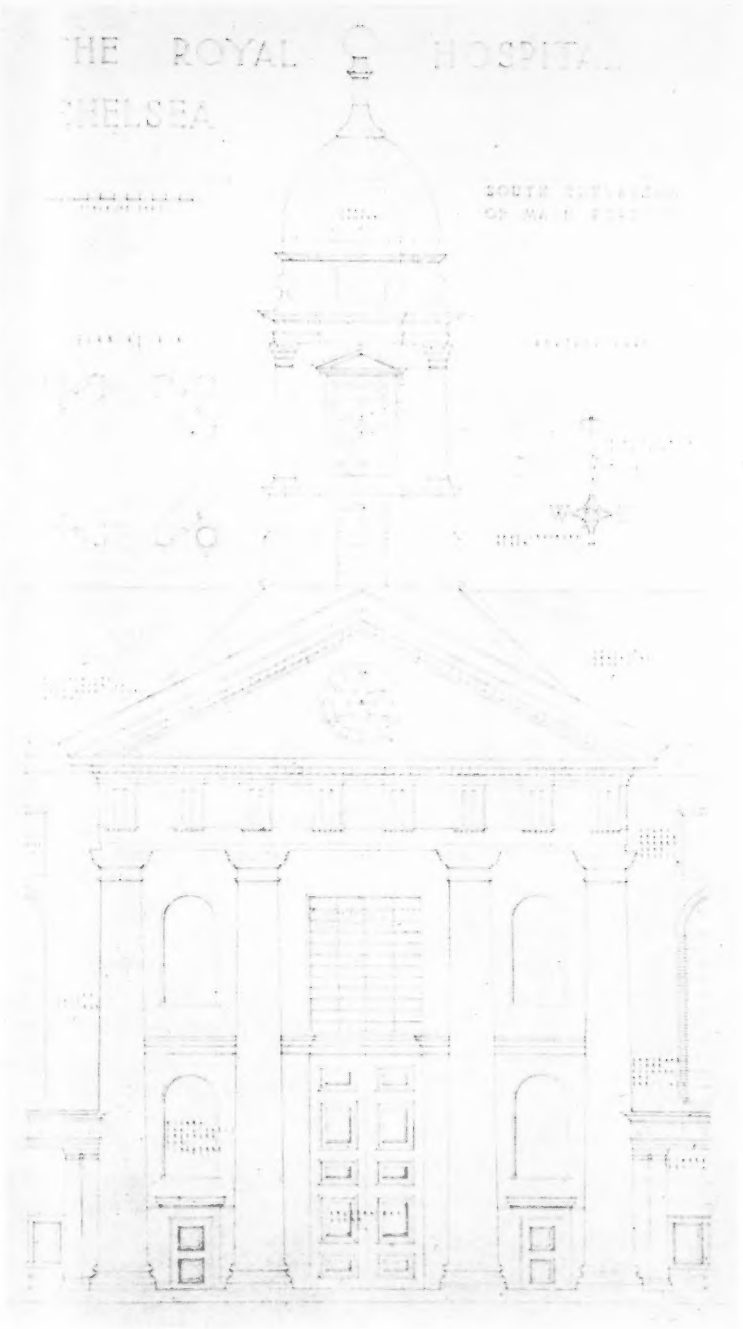
Mr. C. F. Walker [*S*] was awarded a Certificate of Honourable Mention for his sensitive drawings of early English Renaissance Tombs with details in colour. These drawings form a valuable piece of research work but the author did not equal the winner's consistently high standard of draughtsmanship; his drawings are a little spotty and are spoilt by careless lettering in places. The other four entries, although creditable, were not considered to be quite in the same class as these two.

The Arthur Cates Prize, a sum of £100, was offered to those who have passed their Final, 'for the promotion of Architecture, more especially in relation to the application of Geometry to vaulting, stability of edifice and design'. No entries were received, and I understand that this year the prize will be offered for 'A study of the Spanning of Space with particular reference to roofing'. This seems to be rather an opportunity for some of our reinforced concrete designers. Another £100 prize which attracted no entries was the Owen Jones Studentship for the study of the application of colour to architecture.

For the oldest of the Institute Prizes, the Essay Prize, there were eight entries, and I should like to read you the following comments of the jury: 'The Silver Medal and £50 goes to Mr. Gavin Walkley [*A*] for his essay on "William Wilkins, R.A." While the English is a little pedestrian, this is the only essay which makes a substantial "contribution to architectural thought or scholarship" as required by the conditions. We wish he had given us a fuller critical appreciation of Wilkins in relation to his contemporaries in England and on the Continent. But the essay as it stands is an interesting human document based on intelligent and thorough



The Neale Bursary: £100 for the Measurement of Old Buildings was awarded to Mr. M. E. Taylor, M.T.P.I. [*A*], St. Andrews, Fife, for his thesis and drawings on English stone bridges. Above, one of the drawings.



The R.I.B.A. Silver Medal for Measured Drawings and £75. Awarded to Mr. Fred. Potter [*A*], of Bromsgrove.

research, both topographical and architectural.' The jury also considered that the standard of English in some of the essays was poor.

Now we come to the Senior Design Prize, the Victory Scholarship, which is open to those of Final Standard in the Empire. The subject was 'A National Theatre'. The site lay in a capital city on the north side of a river along which was a riverside promenade used by pedestrians only. Important roads formed the northern and eastern limits to the site, that to the east crossing a bridge at a height of 30 feet above the promenade. The project included three theatres of different sizes linked by a concourse, an open-air theatre, a restaurant, a library, technical services and gardens. The National Theatre was to form part of a scheme of civic buildings along the river front, buildings which 'display a quality in keeping with civic dignity and are of such a character as would permit the new theatre to take full advantage of the imaginative use of space and of modern materials and construction'. The concourse was to be developed as an important feature of the scheme, spaciousness being the predominant note. It was to contain a winter garden and exhibition bays for the display of costumes and stage designs, and provide easy access to the terraces and gardens.

Here, obviously, was a programme with great possibilities for those with imagination. There were 51 entrants and after seeing the 'en loge' drawings the jury selected ten to proceed with the final drawings. In choosing the finalists there were certain points to which the jury attached special importance. These were the linking of the theatres by the concourse, a fine elevation to the river, easy circulation for the large crowds visiting the site, and good backstage services.

It appeared that the plan adopted by a number of competitors, with the concourse parallel to the river and the theatres to the north of it would have many advantages. This plan was adopted by the winner of the Victory Scholarship, Mr. Frank Booth [*A*], who has the appropriate pseudonym of *Vincit*. His three strainers are brilliantly drawn in grey ink line and wash and his scheme is a most interesting solution of the problem. The concourse, which is flat-roofed and cigar-shaped on plan, has its south front opening on to the river terraces through glazed doors between tall rectangular windows, as shown in the detail on the right. Note the delightfully drawn low relief sculpture over the doors and in the window reveals. The concourse is entered from the bridge road at the east end and a tall circular winter garden forms an impressive terminal feature at the west. Beyond this lies the open-air theatre. The three main theatres lie to the north of the concourse and are entered from the road along the north side of the site. Obviously such a plan permits a fine elevation to this road, but the placing of the stages between the auditoria and the concourse might easily lead to difficulties in providing the necessary access from the theatres to the concourse or in handling the backstage arrangements.

However, Mr. Booth is not the man to be worried by such details. Between the theatres he places his exhibition bays in two display halls through which the audiences stroll between the acts to the concourse, and so to the attractively planned river terraces and boat landing. The backstage problem he tackles boldly by means of a service road ramping down to a tunnel below stage level from which he gives access to the stages, dressing rooms, workshops, stores and rehearsal rooms,

In this way Mr. Booth is able to show two fine elevations while most of his rivals have only one. His circulation and car parking arrangements are excellent, and his detail full of interest. I doubt whether the elliptical restaurant above the concourse would be very satisfactory in perspective although its position gives it a fine outlook across the river ; nor were the jury entirely satisfied that this room could be adequately supported as shown on the section.

But altogether the scheme is a most able and brilliant piece of work presented with real artistry ; the jury were unanimous that Mr. Booth was an outstanding winner of the Victory Scholarship. I congratulate him most warmly, and I feel that congratulations are also due to the Leeds School of Architecture.

The winner's nearest rival was Mr. R. W. Leggatt [*A*]. He gives his concourse a concave front which seems to harmonize better with the line of the river than that of the winner. His winter garden is at the east end and the restaurant on the first floor, at the west. The approaches and car parking are well handled with the exception of the main entrance which should not lead off the roundabout.

Mr. Leggatt's backstage arrangements are superior to those of Mr. Booth and are, I think, the best submitted. The scheme as a whole has neither the power nor the artistry of the winning design. Nevertheless it is a competent piece of work and the jury have awarded it an Honourable Mention.

There were three candidates for the Neale Bursary and the sum of £100 which is awarded for the measurement of old buildings. The winner is Mr. M. E. Taylor [*A*], who has written an interesting thesis on stone bridges in England, which is accompanied by a fine set of pencil drawings on four strainers. A member of the jury writes that ' his work and written submission, particularly, show great interest in, and a capacity for, research. His thesis is a very readable and well-considered treatise and the similar work which he proposes on Scottish Bridges should be a useful contribution to knowledge'.

The Hunt Bursary is offered for the study of housing and town planning and evidence was submitted by Mr. Neville Ward [*A*] and Mr. R. D. Lawson [*A*]. The jury awarded the Bursary and £75 to Mr. Ward but considered that his programme of travel and study ' The relationship of house to city in six towns ' was far too ambitious. They also advise the winner to concentrate on quality rather than size, on clear concise English rather than clichés and journalistic phrases and finally, to soft-pedal a tendency to showmanship.

The R.I.B.A. Alfred Bossom Research Fellowships are awarded for the purpose of enabling members of the Royal Institute to undertake specific architectural research work. There were six candidates and Mr. David du R. Aberdeen [*F*] was awarded the Fellowship of £200. Mr. Aberdeen, who is a Donaldson Medallist, and was also a Soane and Rome Finalist, submitted some excellent drawings and an interesting thesis on Paris Hotels in the seventeenth and eighteenth centuries. He proposes to use his Fellowship to go to Brazil to study contemporary architecture.

That concludes my criticism and I should like to end by offering my congratulations to the winners, and by wishing better luck next time to those who were unsuccessful. I feel also that our warm thanks are due to the juries for the conscientious way they have done their work.

EDITOR'S NOTE—In giving his criticism, Mr. Minoprio necessarily referred to competitors in the anonymous competitions by their pseudonyms. The names of competitors have been substituted in the foregoing report for ease of reading.

VOTE OF THANKS

Mr. A. B. Knapp-Fisher [*F*] : It is an easy and pleasurable task to propose a vote of thanks to Mr. Anthony Minoprio. His task has not been so easy ; but as an old friend of Mr. Minoprio I know that he has carried it out with meticulous care and with an understanding of the various problems which these competitions presented this year.

A critic, if he is to be a good critic, must have many qualifications. It would take a long time to enumerate all of them, but I will mention some—knowledge, background, and infinite capacity for taking pains in an arduous task, an analytical mind, balanced judgement, and, last but certainly not least, an ability to see points of view not always his own, which is no easy matter. Mr. Minoprio possesses these qualifications and many others.

It is good to see these Prizes and Studentships being awarded once again after the war and taken out of store, even though some of them are rationed, and to hear the old names again which roll on one's tongue so nicely—the Tite, the Victory, the Owen Jones and others. This year I hope that we shall have back the Florence, the Godwin, the Wimperis, the Grissell, the Pugin and so on. It is interesting to find that the Tite Prize attracted 153 candidates in the first instance. Many of us wish that the award could be higher than it is, because £35 is not very much today for travelling for two or three weeks in Italy.

The Owen Jones Studentship was never very popular, but I think it would be unfortunate if students today were to neglect the opportunity given by this Studentship to cultivate a knowledge of the application of colour as a means of architectural expression. Colour and its attraction for old and young have nothing to do with questions of tradition or modernism as such ; there is no label attached to the use of colour. I hope that students will in future enter for this competition.

Looking back and thinking about these Prizes and Studentships, one feels that there will always be value in an inherited past. Many of these Prizes and Studentships are old and come to us from a very great inherited past ; and so, in thanking Mr. Minoprio for his labour, and in thanking him in no formal way for his valuable criticism, I should like to say ' Long live the Prizes and Studentships of this Institute, which are a means of testing the skill, industry and imagination of students!' I congratulate the winners, and I praise and applaud all those who have submitted work. They, too, have shown enterprise and a seeking after adventure which is a very desirable quality in these difficult times.

Mr. J. S. Walkden [*A*] : I welcome the opportunity of thanking Mr. Minoprio. It has been my privilege to work with him on two of his juries, and I know what an immense amount of work and energy and interest he has put into his task. This work has been going on for months, and has culminated in the admirable address to which we have just listened. My memory is a little dim after seven years or so, but I think that this is the second time that Mr. Minoprio has been asked to give this criticism. When we remember that in that long interval many of our students have learnt how to shoot, and how to shoot straight, I think you will agree that it takes a very brave man to stand up here and speak as Mr. Minoprio has spoken tonight. I have great pleasure in seconding the vote of thanks.

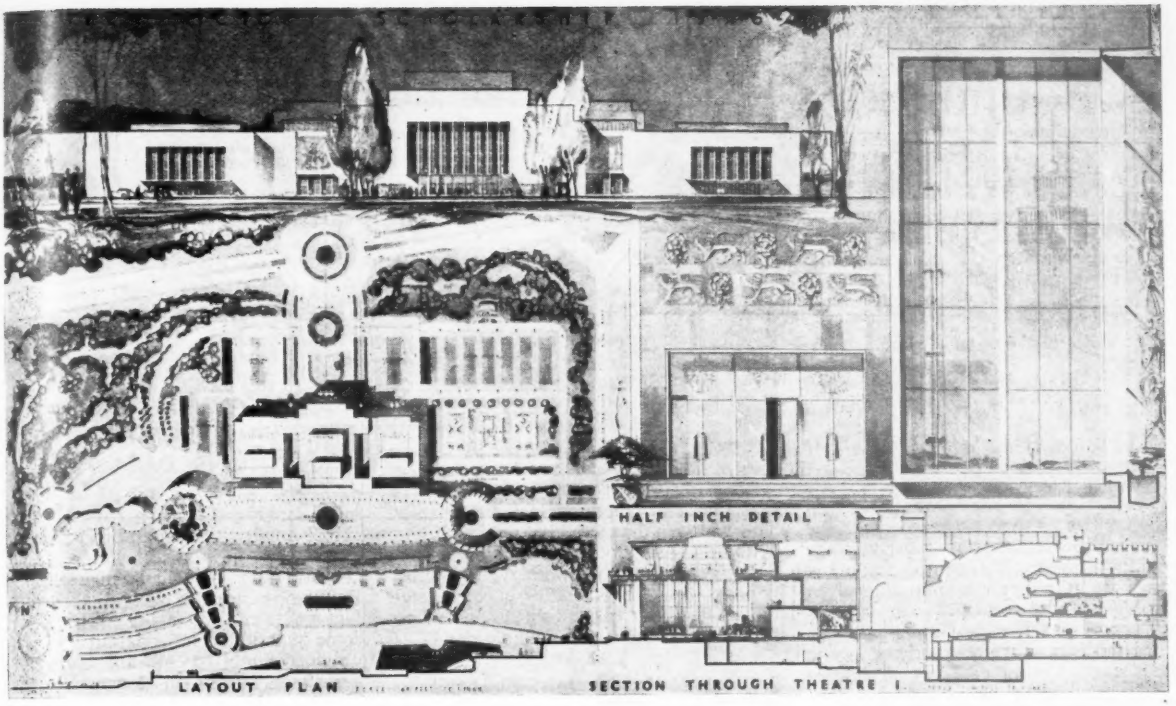
Mr. Anthony Minoprio: I should like to thank Mr. Knapp-Fisher and Mr. Walkden for their very kind remarks, and to thank my audience for the way in which this vote of thanks has been received. I must confess to a slight feeling of satisfaction at the knowledge that it is not customary in the Royal Institute of British Architects to ask the critic to do his job again, so that I feel quite free for the future!

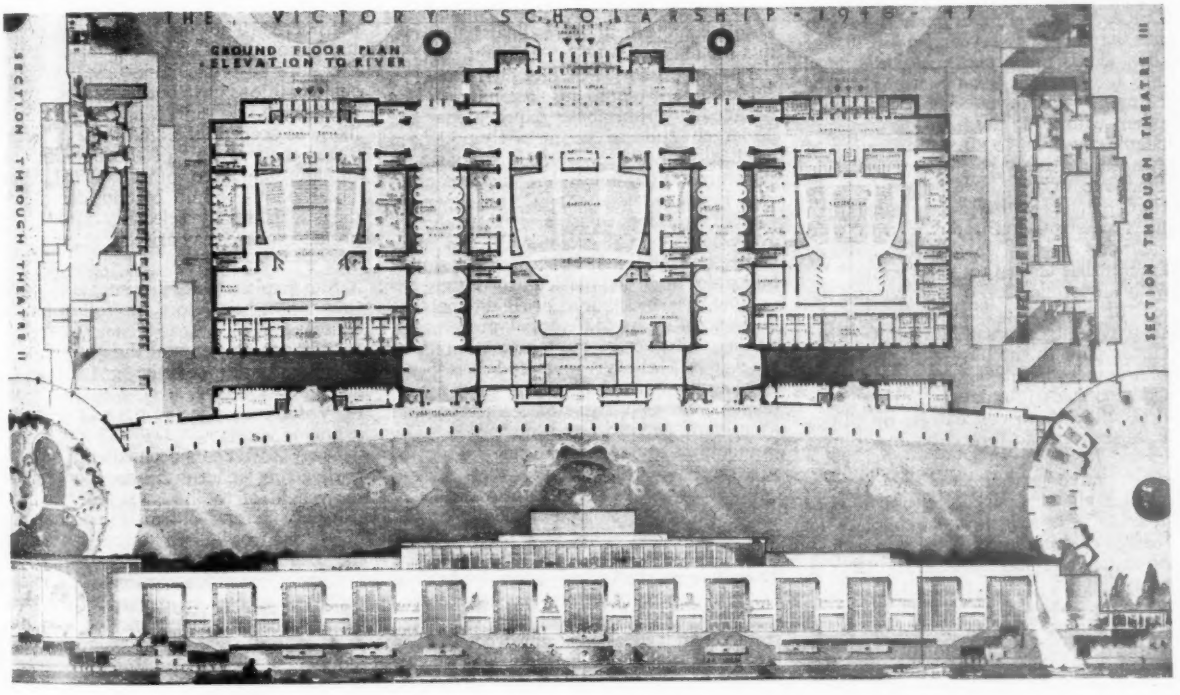
Note: The Prizes and Studentships Pamphlet for 1947-8 will not be available until May owing to printing delays in the present emergency.

KING'S COLLEGE CHAPEL

'Tis quiet now, and all around the glow
Of many flick'ring candles strangely bright
Illumes the antique panels row on row ;
While to the arched roof soft chequer'd light
With gradual stealth, deepens to densest shade ;
Yet finely interspers'd serenely glooms
Each proudly towering pier, severe and staid.
Majestic symmetry !—for lo, there looms
The mighty organ with its shapes half seen
Of antique carving, pipes of fluted gold,
Flank'd by twin seraphim whose joy serene
Seems as if Heaven itself they did behold:
Beyond the pain of this humanity
And o'er its fret, our immortality.

The sonnet which concluded the winning essay by R. G. Harris of the Perse Boys' School, Cambridge, in the competition open to boys and girls in Public and Secondary Schools.



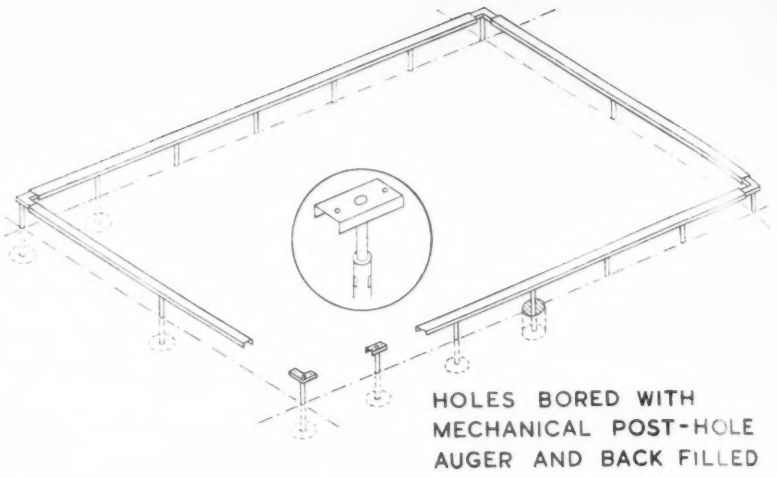

THE VICTORY SCHOLARSHIP - 1946 - 47
GROUND FLOOR PLAN
ELEVATION TO RIVER
SECTION THROUGH THEATRE II
SECTION THROUGH THEATRE III

THE VICTORY SCHOLARSHIP. The two principal drawings of the winning design by Mr. Frank Booth, Dip.Arch.(Leeds), A.M.T.P.I. [*A*] (Leeds School of Architecture). The subject was a national theatre.

House Foundations*

by W. H. Ward
B.Sc. (Eng.) A.M.Inst. C.E.

Read at a meeting of the R.I.B.A. Architectural Science Board on 1 January 1947. Mr. R. Llewelyn Davies, B.A. [*A*] in the chair



HOLES BORED WITH MECHANICAL POST-HOLE AUGER AND BACK FILLED

1. **Introduction:** In recent years numerous enquiries have been received at the Building Research Station regarding the cracking of houses. This can be accounted for in part by a closer examination given to buildings to detect possible war damage. But there is no doubt that there has been during the war years an increase in the incidence of natural cracking in houses built on heavy clay soils in Southern England due to the prolonged period of rainfall deficiency during 1942-45. This low rainfall has caused the clay to dry out to greater depths than in previous years and shrinkage of the soil has taken place below the level of the foundations. Examinations of the cracking of houses on heavy clay soils together with long term studies of soil mechanics have led to a reconsideration of the traditional ideas of house foundation design. One of the most important conclusions reached is that depth rather than width is the important factor with strip foundations on clay, whereas the emphasis in the past has tended to be on width.

With the termination of the war and the advent of new houses, it became very obvious that whilst a great deal of attention had been paid to the design of the superstructure, there had been a relative neglect of the design of foundations. There is a natural tendency to concentrate on things that are seen and to forget the importance of buried foundations. High standards of comfort and construction efficiency have been set in the superstructure, but no corresponding advances have taken place in the design of foundations which are sometimes inadequate and often irrational and may take longer to construct than the superstructure does to erect. It is therefore an appropriate time to review the whole question of design and construction efficiency of house foundations. The most reliable way of analyzing a problem of this nature is to study the existing houses, and if troubles such as cracking are encountered, to explore and find out the causes so as to see where the foundations are deficient and where they are wasteful in relation to fundamental principles and experience in soil mechanics. This has been the method of approach.

Some of the troubles encountered were described recently by Cooling[1] and another paper is in the press relating in some detail to the effects of trees and shrubs on shallow founded structures in shrinkable clay.[2]

2. **Essential Requirements:** Essentially a good house foundation should aim at sitting the structure on the ground in an efficient manner so that during its life the absolute movement is small and the relative movements between different parts of the house do not cause unsightly cracking. The heat and damp insulation must also be adequate, but these requirements can be largely considered separately and need not be discussed here. Some forms of superstructure are quite flexible and consequently it is not necessary to use an expensive rigid foundation to isolate practically all movements of the ground. On the other hand, the traditional brick house is almost inflexible and, in particular, houses involving large block units or rigid panels are quite sensitive to differential movements. In these latter cases the tensile strength of the wall as a whole is small and therefore it is necessary to reduce the ground movements as far as possible or use a very rigid foundation to isolate the movements. The foundations must therefore suit the type of structure.

A good example taken from Australia of a flexible house founded efficiently on the ground is shown in Fig. 1. It might be said that the house has no foundations in the normal sense, but there is no doubt that anything more elaborate is unnecessary and wasteful. This foundation is almost as readily removed as it is constructed. It is interesting to compare this example with the rather rigid and costly foundations used for many of the flexible temporary houses in this country. The main difficulty in designing an efficient foundation arises from the fact that soil is a natural material whose properties not only vary from place to place, but also from time to time. An observant local builder may become particularly conversant with his local soil in a broad qualitative way and as the result of experience adjust his foundation to suit the conditions. On the other hand a stereotyped foundation is not so likely to achieve satisfactory results in many districts unless some quantitative information is previously obtained about the soil and the necessary adjustments made in design. In general, because the house is shallowly founded it is not only the soil, but also the effect of the climate on the soil, which has to be considered. The question of site exploration[3] and a consideration of the climate are therefore of prime importance. When the site conditions have been explored it is then necessary to consider what movements are likely to occur in the building as a result of either the presence of the building itself, climatic changes, or other external changes. These points should be considered before the site is finally selected, or else unexpected expense may arise.

3. **Site Exploration:** Movements of a house foundation arise from the following three causes:
(1) Mass movements of the ground.
(2) Deformation of the ground due to changes in load.
(3) Volume changes of the soil due to the changing weather.

Mass movements occur due to landslips, mining subsidence and brine pumping and the weight of the house is scarcely a contributory factor. Deformation of the ground due to changes in load normally arises from the weight of the house and the discussion is restricted to this cause. In other cases deformation may be caused by the weight of filling material and particularly in the case of peat by ground water lowering reducing the buoyancy. Volume changes of the soil caused by the changing weather commonly arise by seasonal drying and wetting of shrinkable clays and the discussion will be restricted to these movements. Volume changes may be also caused by frost heaving, but since in this country no evidence of damage in houses due to this cause has been found it is of little signifi-

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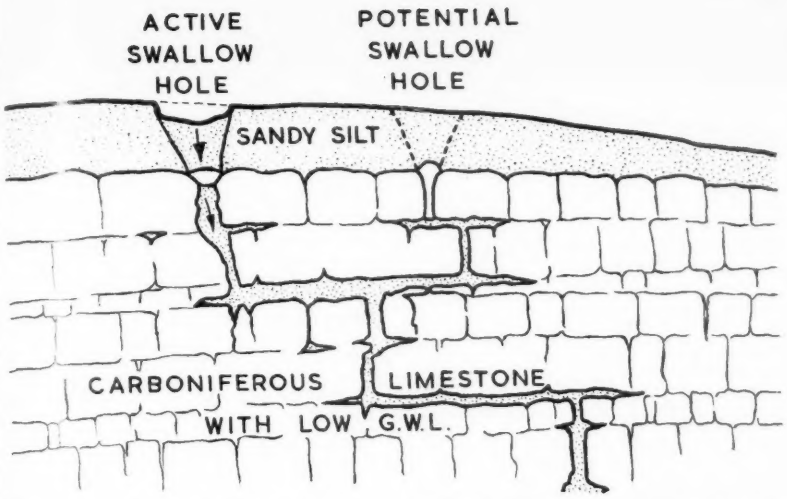


Left-hand page: Fig. 1: Australian prefabricated house foundation. Right-hand page: Fig. 3: Typical conditions for swallow holes.

cance. The possibility of these movements occurring may be established by careful site exploration. Before visiting the site it is as well to find out as much local information as possible regarding the geology and local building practices from recorded data and local authorities. Useful information can be gained from surface exploration of the site. It is usually better first to survey the general area rather than concentrate too much on the immediate site. Nearby houses of similar construction can be inspected to see if they are cracked and the type and depth of foundations obtained, if possible. Notes can be made of the vegetation; the types of grasses may, for instance, at once indicate impeded drainage. The clearing of trees on a clay soil may lead to a general swelling of the ground as a result of the loss of transpiration by the trees and it is as well to let a winter pass after clearing before starting construction. Tree stumps need complete removal and lead to considerable disturbance of the ground, particularly if explosives are used. The area, if it is subject to flooding, will need bulk filling and on such sites weak compressible soils are likely to be found below the surface. In this case, it may be the weight of the filling rather than the weight of the house which will cause settlement. Particular attention should be paid to old filling, because this is even more difficult to deal with than natural ground owing to its extreme variability.

If the ground slopes more than 5 to 10 deg. there is the possibility of mass movement of the ground down hill[4]. The presence of this soil creep is often visible in the form of shallow hollows and hummocks ranged alternately up the slope (see Fig. 2). If the ground is heavily grazed, cattle terraces along the contours are indicative of downhill creep of the surface. If small springs or wet areas are encountered on the slope, water may be issuing from a fine sand stratum that may erode as soon as the turf is removed. Unstable ground of this nature is best avoided.

In limestone or chalk country, distinct round hollows may be encountered reminiscent of bomb craters, except that there is no upheaval and often the only portion bare of grass is a fairly steep face at the periphery. These swallow holes, as they are called, occur where there is a sandy or loamy soil overlying fissured limestone or chalk some 10 to 20 ft. below. Many examples may be seen on the edge of the London basin, in the Mendips, parts of Monmouthshire and elsewhere. The water level in the rock is normally low and surface water seeping down through the sandy soil during periods of heavy rain washes it progressively downwards into the water-worn fissures (see Fig. 3). Even if the holes that are visible at the surface are avoided, new ones may develop elsewhere as soon as a little excavation is commenced. The sandy soil temporarily arches over every fissure in the limestone and a slight change in drainage or loading conditions in the sand is sufficient to upset its equilibrium. The local farmer will be familiar with them because they are potential cattle traps and have to be kept filled up. Where this is the local custom occasional mounds may be seen as well as hollows. When a small polygonal pattern of cracks up to about $\frac{1}{2}$ in. wide is seen at the surface of the ground during dry summer periods then it is certain that the surface soil is shrinkable. If cracks larger than this are encountered, often more or less parallel to each other, or rupture steps or terraces in the surface are visible, these must be taken as an indication that deep-seated movement is in progress, such as may arise from mining or brine pumping. If these latter features are adjacent to the top of a slope they may be indicative of a large landslip and the site should be abandoned.

Exposures of the ground in nearby ditches may give some indication of the subsoil, but it is necessary to ensure that the soil exposed has not been deposited locally by the stream. Comparisons with other exposures may confirm this. If, as a result of this initial exploration, the soil down to a depth of 10 ft. is still unknown in detail, then it is advisable to put down a few trial pits or borings on the site with a post-hole auger, so as to link up with the information available from the geological map and handbook or other sources of information. Particular emphasis is placed on adequate site exploration, for the experience of the Station indicates that many of the foundation troubles encountered in dwelling houses have little or nothing to do with the weight of the house, but are due to movement of the ground either within itself or as a body. Movements particularly associated with certain types of soil are dealt with in more detail under foundation design.

Careful consideration needs to be given to the exact floor level of the house in relation to the site levels, particularly on sites of varying contour. Many problems are inter-related here and they are rather critical in relation to the cost of foundation, road and drainage work. The levels of all these items should be considered together with amenities, plan arrangement, daylighting, aspect and æsthetic considerations, so as to avoid excessive filling or excavation. Filling, if it is really necessary and at all extensive, is best carried out in bulk using the best available material with controlled compaction and rolling before the foundations are constructed. Examples are frequently seen, however, of several feet of unsuitable sticky clay filling being placed with difficulty after the drains and foundations have been laid, and when it is impracticable to obtain reasonable compaction.

4. **Design of Foundations in Relation to Movements:** When the site has been explored, the exact nature of the ground discovered and the movements indicated on the site noted, the foundation design may be considered in relation to the probable movements. Normal traditional two-storey brick houses only are considered, unless special reference is made to other forms.

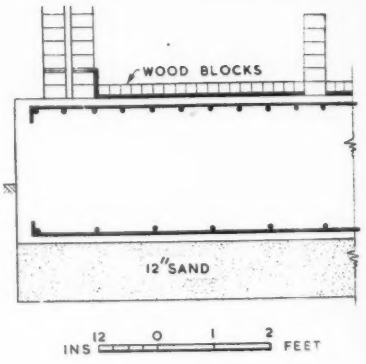
(*a*) **Mass Movements of the Ground:** It is obviously advisable to avoid as far as possible sites on which mass movement of the ground may occur, but in some districts near to centres of employment they are so widespread that they cannot be avoided. Such is the case in many areas of the country subject to brine pumping and coal mining, the latter areas being quite common. The most difficult sites are above abandoned coal workings where cavities left in the ground progressively close up. If it is definitely known that movements are in progress then the house needs to be made so rigid that it will not crack, however it is supported from the ground. The worst condition of loading that is likely to arise is when the house becomes unsupported over half its area. Rigidity may be introduced in two ways (1) by making the main walls rigid like a deep beam, (2) by putting the building on a rigid raft. The second method is probably the cheapest and most satis-

factory, since the first method is complicated by the normal position of window and door openings. The raft needs to be up to about 2 ft. 6 ins. thick even for detached houses and roughly should be equally reinforced in both directions top and bottom (see Fig. 4). If cheaper the raft may be made hollow. In order to avoid concentrations of stress as a result of an abrupt rupture in the ground it is advisable to bed the raft on a layer of watered dense sand about 12 ins. thick, unless it already exists at the site. It is not suggested that under such conditions every house should be based on a raft 2 ft. 6 ins. thick, but depending on the risk of movement the thickness can be reduced. For example, if there is evidence that the movements within a period of a day or so are never more than ½ in. and the total relative movement will never be more than 1 to 2 ins. within the limits of the house, the sand bed may be sufficient to even out these differences so that a raft 1 ft. 6 ins. thick can be sufficient.

It is preferable to build detached houses of symmetrical plan, rather than semi-detached houses, and terraces should be avoided. The thickness of the raft may be reduced to up to 2 ft. for bungalows and houses of light construction. Flexible timber houses on normal foundations are suitable provided provision is made for adjustments in the anchorage and the subsequent introduction of packing pieces. A reinforced concrete raft considerably lighter than those previously mentioned may also be used in conjunction with a light timber structure, and its design is simply a question of taking the worst possible loading conditions. With raft foundations in these areas the heavy parts of the structure, e.g., the chimneys, should be placed in the centre of the plan as this reduces the stresses. In addition to securing adequate foundations, attention needs to be paid to the services for there will be relative movements between them and the house. Special measures should be taken to introduce flexibility in pipes adjoining the house. Elsewhere away from the house it is also advisable to use flexible pipes or flexibly-jointed short lengths of pipe. A mastic joint to the normal earthenware pipe is worth consideration where the movements are not too large.

(*b*) Deformation of the Ground due to the Weight of the House: The foundation pressure from a traditional two-storey brick dwelling on strip footings does not normally amount to more than ½ ton per sq. ft., a pressure that is small in relation to the safe bearing capacity of most natural soils, e.g., sands and gravels, boulder clay and heavy clays, etc. Where non-shrinkable materials like fairly clean sand and gravels or very stony boulder clays extend to a depth of about 5 ft. or more from the surface and are not underlain by peat or by soft clay, i.e., clay that can be easily moulded in the fingers in its natural state, load deformation is not a problem. Provided the top soil is removed and the sands are dense there is no need to found to a depth greater than 18 ins. and the width needs to be no greater. If the sand is loose, such as old

Above: Fig. 2: Severe soil creep in Fullers' Earth Clay near Bath. Right: Fig. 4: Raft foundation for mining subsidence.



dune sand in seaside towns, then a depth of 4 to 5 ft. should be compacted before using strip footings. Compaction may be accomplished by complete ponding of the site followed by mechanical rolling or better still by deep ramming of the ground at close centres. It may, however, be cheaper to use a fairly light raft without compaction. The sand is described as loose when a wooden post about 2 ins. diameter is easily pushed into it by hand to an appreciable depth. If the sand is dense it is difficult to produce a penetration of more than 1 to 2 ins. When the sand or gravel is 2 ft. or less in depth, becoming dry in the summer, and overlies a shrinkable clay, then the shrinkage properties of the clay may become significant and normal strip foundations should extend to a depth of 3 ft.; a light raft may also be used.

Very soft clays, silts and peats found adjacent to river estuaries and lakes are weak in relation to the weight of the house and it is necessary to take special precautions in such districts to avoid excessive deformation. Adequate site exploration and testing of the soil is essential, even if adjacent construction is satisfactory, because the strata is likely to be variable. Design in the case of soft clays and silts may generally be based on the existing shear strength of the material, but where significant layers of peat exist even 15 ft. below the surface they may be quite important. Consolidation tests will be required on the peat and the most important point is to determine whether the thickness of the peat varies within the vicinity of the house. If this is so, and the peat is of the fibrous highly compressible type, tilting of the house is liable to occur and will continue for long periods unless the house is founded on piles extending to a fairly thick resistant stratum below the peat.

If the bearing capacity of the soft clays and silts as determined from tests is inadequate in terms of the usual widths of strip footings, say up to 3 ft. wide, and provided the strata do not vary appreciably in thickness and the consolidation settlements are fairly small, it seems generally desirable to use a reinforced concrete raft under the whole house. Detached houses of simple outline are preferable, and heavy parts such as chimneys should, if possible, be arranged at opposite ends of the building, so as to reduce the general dish-shaped settlement that is obtained with uniform loading. It is not possible at present to design such a raft on a strictly rational basis, but a survey of practice suggests that a reinforced concrete raft 6 to 9 ins. thick, extending a small distance beyond the wall line is adequate for a normal two-storey brick dwelling. In these alluvial areas the upper few feet of soil is usually stronger than that below due to centuries of drying, and it is therefore generally advantageous to keep the foundations high in such cases. However, if the upper material undergoes sea-

Fig. 5: Cracked corner of house on shrinkable clay, N. London.
The corner leans over 2 ins. at eaves level.

sonal movements it is necessary to guard against these effects under the external walls. Methods of overcoming these movements are discussed later. When the strata vary in thickness under the house, and excessive tilting continuing for a long time is possible, piles need to be introduced to reach a relatively thick firm stratum at greater depth. A stratum of dense sand or gravel 7 ft. thick, even with weaker soil below, is sufficient for the traditional house. The piles may be used either in conjunction with a reinforced concrete raft if a solid floor is used, or with reinforced concrete beams at ground level if a suspended floor is used. (Fig. 7.)

(c) **Shrinkable Clays:** The farmer refers to soils consisting of shrinkable clay as heavy land and most architects and builders must know these sticky tenacious clays, which cling to the boots so well in winter. They require particular attention for two reasons: (1) because they are very extensive in populated areas; (2) they have been the cause of a good deal of cracking and settlement in existing dwellings. The clays of this type are known geologically as Woolwich and Reading, London, Gault, Weald, Kimmeridge, Oxford and Lias clays. In addition the glacial drift derived from these clays may be equally or more shrinkable. These heavy clays cover extensive tracts in some 20 English counties S.E. of a line from Hull to Exeter, and include some red triassic clays.

It is quite simple to determine whether a soil is appreciably shrinkable or not by cutting out a rough rectangular block, say 2 ins. by 2 ins. by 6 ins., of natural ground, preferably in winter or spring. Its initial length should be measured to the nearest $\frac{1}{32}$ in. and subsequently measured twice a day as it is left to dry out in a room until no further shrinkage occurs. The total change in length expressed as a percentage of the final length represents its linear shrinkage capacity and may amount to as much as 20 per cent. Cracking occurs if the shrinkage is large and the width of the cracks crossed by the ruler should be deducted from the measured length to obtain the true linear shrinkage. In summer the shrinkage capacity of the clay is indicated by the widths of surface drying cracks. The amount of shrinkage that occurs in a particular clay near the surface during summer is dependent mainly on the rainfall, since the evaporation throughout the country does not vary appreciably. It is perhaps only a coincidence that these clays are only encountered in the drier parts of the country, the average annual rainfall generally decreasing eastwards towards the Wash and the Thames Estuary, with scattered low centres in the Midlands.

Few observations are available relating to the extent and depth of summer drying in clays. Measurements at Watford[6] and Cambridge[6] under grass conditions suggest that measurable drying may extend to a depth of about 5 to 6 ft. and that the total change between summer and winter conditions at both sites is equivalent to about 5 ins. of rainfall. The annual rainfall at Watford and Cambridge in the years concerned was about 26 and 22 ins. respectively. In applying these results to larger areas of similar annual rainfall, the deviations from the mean are important. The abnormal succession of dry years during 1942-45, for example, caused exceptionally deep drying of the ground and old houses which had scarcely a crack in them subsided during this period due to drying below the level of their foundations. Glasspoole[7] has shown that in the shrinkable clay area previously defined, the mean percentage deviation from the normal of annual rainfall rises roughly westwards from about 11 per cent on the east coast to about 16 per cent inland of the Severn Estuary. Bilham[8] further shows that for long period observations at the Radcliffe Observatory there are roughly equal numbers of years with positive and negative deviation from the mean, and that the mean rainfall in the three driest consecutive years is 82 per cent of the long period average. When therefore the distributions of deviation and average annual rainfall are compared it appears that the worst conditions of climate in relation to drying of the soil are likely to be about the same all over the clay region. Thus, for practical design purposes the results of observations on houses in the London suburbs during the recent dry years may be applied throughout the shrinkable clay region where the annual rainfall is less than about 30 ins.

When a house is built on a shrinkable clay site the seasonal changes in the ground are locally modified by the shelter which it provides. The changes that occur under the centre of the house will depend initially on the season of construction. No detrimental effects have so far been found from either these or later changes; the variations are probably small, due to the absence of transpiration of the grasses. The seasonal changes that occur around the outer walls of the house are far more important. When the foundations are shallow, summer drying penetrates underneath from the outside, particularly at the corners. When the clay has shrunk sufficiently, the corners crack off and tilt outwards, because they are not

self-supporting in the traditional house. Other things being equal the sunniest south corners and walls are most liable to move. The outward tilting of the walls is characteristic and in bad cases it is easily visible, since quite a small differential movement across the footing is magnified considerably at the top of the wall. In the worst cases the tilting of the wall visibly opens up the roof tiles, sometimes drags the first floor with it and cracks can spread quite extensively inside the house. All gradations of movement are found ranging from hair cracks to ones up to 1½ ins. wide, the largest movements being associated with the shallowest foundations. During the wet season the clay swells with sufficient pressure to cause the cracks to close partially. Windows and doors which have become difficult to open and close in the summer are easier to move in the winter and pieces of paper fastened across the cracks in summer are found to be ruckled together in the winter. Tie rods are often found to have been inserted in houses with foundation movement, sometimes serving a doubtful purpose; their use is best restricted to rectifying structural weaknesses such as tying spread arches and roof trusses.

From the many examples of houses cracked in the above manner in the London suburbs it has been found that the external strip foundations need to extend to a depth of 3 ft. below adjacent ground level in flat areas, and on slopes to 3 ft. 6 ins. Internal footings need to be only 2 ft. deep. The magnitude of the differential movement under the external walls below these levels do not appear to be sufficient to induce cracks in the traditional brick house. These depth requirements are likely to apply to the whole of the shrinkable clay region in the S.E. half of the country where the rainfall is less than 30 ins. The necessary depth is considerably deeper than common practice and the cost is appreciably greater. However, the bearing capacity of the heavy clays at a depth of 3 ft. is more than adequate for the normal 2 ft. to 2 ft. 6 ins. wide footing and the width may be reduced to 12 to 18 ins., provided softening of the clay is prevented during construction. Non-traditional methods of overcoming the shrinkage problem are suggested later.

In the vicinity of the root systems of fast-growing trees the depth and extent of drying is much greater than under the average grass conditions considered above. Many cases of bad cracking in dwelling houses in the London suburbs have been attributed mainly to the drying action of young fast-growing trees, poplar and elm being particular offenders[2]. The roots have felt the shortage of rain in recent years and extended their root systems more than normally. Drying to a depth of 8 to 10 ft. is common. Until more precise information is available it is suggested that single young isolated fast-growing trees in shrinkable clay should be kept at least 60 feet away from houses and that rows of these trees should be kept 100 ft. away since there seems to be no reasonable way of founding a house deep enough to get below the root zone. A thin raft is obviously of little use because once the roots get underneath they pass into a zone already deficient in moisture and reduce still further the water stored in the clay, causing shrinkage.

(*d*) **Filling:** The construction of houses on filling is quite a common problem in industrial areas and low lying regions. Tips of loose random materials generally consisting of various waste products may be very expensive to build on owing to their great variability and compressibility. In contrast, filling placed in a selected manner with controlled compaction may provide sites as good as some of the better natural deposits. The present experience of many industrial towns possessing waste land covered with tips seems to be that they are becoming obliged to build on these areas more than ever before, rather than infringe further on agricultural land. Thus it appears that the best long-term policy would be to control and compact all waste products so that they may be transformed quite cheaply into building sites.

The problem of building on filling is considered under the two headings: (i) loose random filling, (ii) controlled filling.

(i) **Loose Random Filling:** Waste filling materials can be arranged broadly in decreasing order of desirability for building as shown below: (1) Mine and quarry waste; (2) Furnace slag; (3) Boiler clinker and ashes; (4) Spent pulverized fuel; (5) Flue dust; (6) Chemical wastes (chalk, calcium sulphate, organic wastes); (7) River dredgings of mud; (8) Loosely tipped spoil heaps from surface excavations, particularly clay; (9) Household refuse (garbage, tin cans, paper); (10) Sawdust.

This list is by no means exhaustive, but is fairly representative of material types. Commonly all of these materials, except (7), are end tipped direct to heights of 10 ft. and often to much greater heights in the case of (1). The only compaction they receive, if any, consists of lorry traffic on the top surface. This does little more than compact the upper 1 to 2 ft. of material. Now many of these materials such as (1), (2), (3), (4) and (5) are some of the best filling obtainable and if they are spread and compacted in layers 6 to 12 ins. thick by means of bulldozers they may be regarded as equivalent to dense sands and gravels for house foundation purposes. If the natural underlying material is highly compressible like peat this may need qualification.

In the more common case, loosely placed materials (1), (2), (3), (4) and (5) should be thoroughly watered and rolled with a heavy smooth roller and the houses founded on a reinforced concrete raft 6 to 9 ins. thick, fully reinforced top and bottom. If the material is easy to penetrate and a thick resistant stratum exists about 10 ft. from the surface, then bored or driven piles with beams may be more economical. Where the site is extensive and consists of loose material consideration might also be given to the deep vibration compaction methods used in Germany[9]. Some of the chemical wastes such as chalk and calcium sulphate compact down fairly easily and it is possible that surface rafts may be adequate. All the other materials, organic wastes (7), (8), (9) and (10), scarcely improve with rolling even if it is possible to get a roller on to them, for they are very compressible. It is therefore usually necessary to support houses on more resistant strata below. Many of these materials decay or compact with time for indefinite periods and it is clearly unwise to found on them directly.

Tips containing combustible matter are liable to oxidize rapidly or ignite, and in thick tips this may be taking place without any obviously visible sign at the surface. Owing to the cooling effect of the atmosphere, tips less than 10 ft. thick are not so likely to ignite, but it is always wise to bore into them to ascertain the temperature. In the absence of combustion the temperature should not exceed 50 to 60 deg. F. at depth. Tips of decaying or combustible matter are only built on as a last resource. The pests will need extermination and it is essential to prevent combustion at a later date. The risk of fires may be reduced by blanketing the whole mass with some inert material such as sand or limestone dust. Support from deeper strata is generally desirable and if piles cannot be used owing to large boulders, it will be necessary to build piers in dug holes. The tops of these piers or piles may be linked with reinforced concrete beams under the walls at ground level. If the filling has been placed on a slope or near to a cutting or river bank, then it is necessary to make sure that a landslip is not occurring in the underlying material. Examples of such movements are frequently encountered.

(ii) **Controlled Filling:** The best types of filling to use are the non-shrinkable, slow weathering materials, such as rock waste, sand, gravel, ashes, etc. The poorest types include highly compressible materials such as silt, clay and rapid weathering clay shales. The materials actually used at any given site will depend largely on their availability. If materials from both groups are available and the better material is scarce, they can with advantage be used in alternating layers. Thus, for example, in a coal mining area, both glacial gravel in limited quantities as well as plenty of highly weathered shale from the tips will be available. Layers of the gravel should be introduced between thicker layers of the shale, and if the top 3 ft. is gravel the possibility of shrinkage troubles are avoided.

The broad principles of soil compaction are now fairly well established and methods of control are becoming everyday practice in this country[10]. The materials should be spread in thin layers and rolled. Basically the amount of water in the clayey materials should be adjusted to an optimum value, but in the climate of this country the site tends to become much too wet during most of the year. Water can only be removed by waiting for the infrequent dry spell, and this is generally impracticable particularly when filling is being placed more or less continuously throughout the year. It is better to introduce dry waste materials in layers with the clay, together with porous

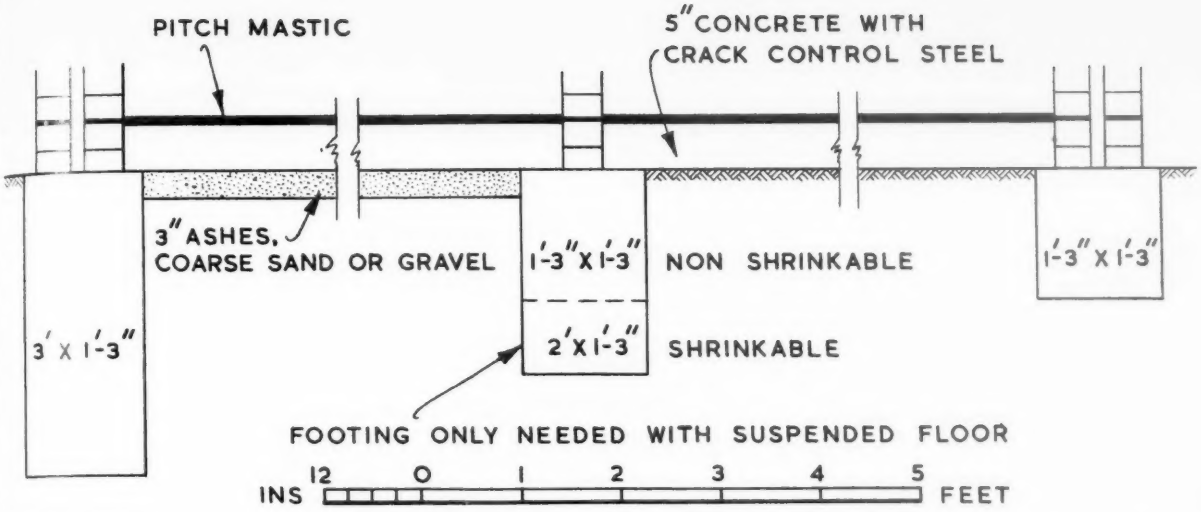


Fig. 6: Strip footings.

materials at intervals to assist drainage. If good compaction is obtained there seems to be no reason why the material should not be regarded as equivalent to natural ground and the appropriate foundations used as mentioned elsewhere. If the compaction is poor, as will be revealed by sponginess under the weight of the roller, it is advisable to use a raft foundation of the type suggested for soft alluvial ground of uniform thickness.

5. **Construction Efficiency and Some Non-Traditional Types of Foundation:** As is well known, the traditional house foundation had become progressively shallower in the period before the war, and common practice was to dig shallow trenches 18 to 24 ins. deep and 24 to 30 ins. wide on the lines of the outer walls, which were back filled with 6 to 12 ins. of concrete. The wall brickwork rose from this concrete and a damp-course was introduced just above ground level. Some time after the first world war site concrete seems to have been introduced, and it became quite common to found the internal walls on the site concrete instead of on separate footings. In some cases the timber floor instead of being fully suspended was supported intermediately on sleeper walls resting on the site concrete. In certain cases the depth and width of the concrete footings were specified fairly rigidly by local building by-laws. This left little scope for variations to suit particular soil conditions and gave little encouragement to improve construction efficiency. The present timber shortage has modified the traditional foundation a stage further and the solid concrete floor with an impervious membrane is now quite common. This does away with or replaces the site concrete and is probably the chief reason for the solid floor foundation being cheaper than the suspended floor construction including site concrete.

The exact function of site concrete is not understood. In practice its thickness varies considerably, often up to 6 ins. thick. By-laws and handbooks suggest that it is provided to reduce dampness, plant growth, smells and pests, but if the cavity is ventilated it seems doubtful whether it is required for these purposes. Inspection of cavities without site concrete in both new and old houses has revealed none of these troubles and the ground is often powder dry, whilst the removal of site concrete in summer from under a six-year-old building has shown the clay to be wetter underneath the concrete than near the surface outside the building. Grass does not live under the conditions in a ventilated cavity and it is well known that once bare ground has dried down a few inches the rate of evaporation is considerably reduced. A layer of 3 ins. of coarse sand, gravel or ashes would provide a clean site and the omission of site concrete would reduce labour and costs appreciably.

There appears to be broadly four types of foundation that may be used for houses (*a*) Strip footing, illustrated in Fig. 5; (*b*) Reinforced concrete rafts (Fig. 6); (*c*) Piles and beams (Fig. 7); (*d*) Isolated pad footings (Fig. 1).

A general cost comparison may be made in relation to the alternative use of suspended or solid floors and whether or not site concrete is used. For example, a direct comparison of Figs. 5 and 6 suggests that the former involves much less concrete and excavation than the latter, and the same remark applies if both forms are used in conjunction with a suspended floor and site concrete. Whereas if site concrete is omitted in Fig. 5 and a suspended floor is used in both cases the difference in material quantities is not so great. Similar comparisons may be made with the other types of foundation. Each type of foundation possesses certain features which make it more suitable for certain types of structure and particular soil conditions; in addition, each foundation possesses certain merits in relation to efficiency of construction and the use of mechanical plant. The four types of foundation will be considered below in relation to the above-mentioned features.

(*a*) **Strip Footings:** Strip footings alone do not provide a floor base and the support of the ground floor is an additional item. The footing is most suitable for supporting fairly heavy walls, e.g., brick walls, continuously on non-shrinkable resistant soils like sand, gravel or rock where the depth of excavation is small. It is also commonly used on shrinkable clays, but the depth required (3 ft.) is rather great and, if dug by hand, the width that the labourer requires is about 2 ft. 6 ins. The quantities of concrete and excavation are then rather large. A width as great as 2 ft. 6 ins. is not normally required because the bearing capacity of the heavy clays is sufficient to support a footing only 12 to 18 ins. wide, as indicated in Fig. 5. This narrow trench section may only be excavated by mechanical means. The type of machine that seems to be required is one about the size of a small market gardener's cultivating tool, so that it may be operated economically by the small builder as well as by the large contractor. It may involve making several passes to achieve the full depth, but the main difficulty with the machine is likely to be associated with turning right-angled trench corners and crossing previously cut trenches.

Several site problems arise in relation to the construction of strip footings. Groups of trenches on heavy clay are often left exposed to rain water, and the clay softens at the bottom. This involves delays because the water needs pumping out and it may be necessary to dig out as much as an extra 6 ins. of softened soil to reach the natural firm ground again. The regular wetness of the climate makes it difficult to avoid trenches being left open in wet weather and this suggests that the foundation operations should be organized in close succession. If interruptions occur deterioration of the trench bottom may be reduced by one of the following expedients: (1) completing the excavation and concreting in short sections, which is permissible because the footing is not a beam, (2) the last 4 to 6 ins. of ground may be left to be dug out later, (3) the first few inches of concrete

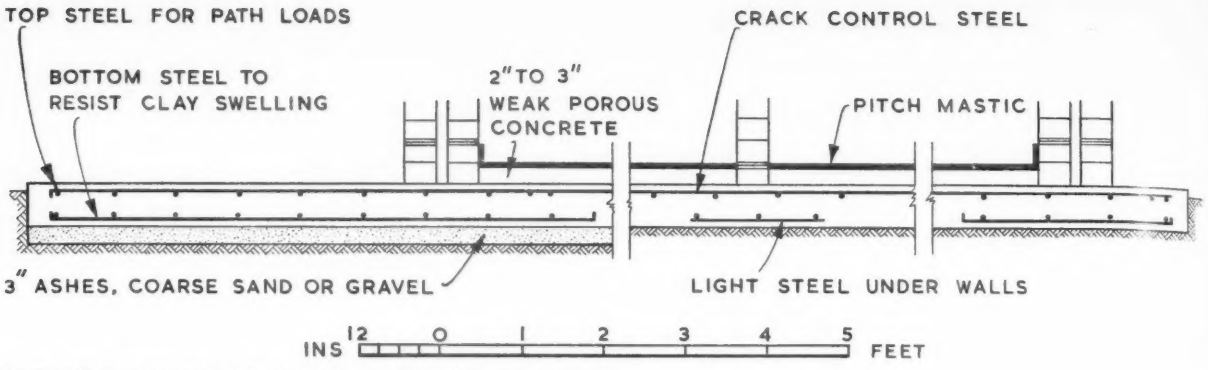

TOP STEEL FOR PATH LOADS
BOTTOM STEEL TO RESIST CLAY SWELLING
2"TO 3" WEAK POROUS CONCRETE
CRACK CONTROL STEEL
PITCH MASTIC
3" ASHES, COARSE SAND OR GRAVEL
LIGHT STEEL UNDER WALLS
INS 12 0 1 2 3 4 5 FEET

Fig. 7: Raft foundation for, left, shrinkable soils and, right, non-shrinkable.

may be placed in advance. These suggestions apply equally to other forms of excavation and have been found to be particularly useful on clay or sandy clay sites.

When drainage trenches are dug close to and below the site of a strip foundation, whether before or after the house is built, it is necessary to ensure that the backfilling is placed in the densest possible manner, particularly on clay sites. Otherwise the soil when it is loaded under the foundations may slowly creep laterally towards the drain trench as the backfilling slowly compacts. On fine waterlogged sand sites quite special precautions may be necessary, such as ground water lowering.

A legacy from the days when the brickwork extended to the bottom of the trench still seems to persist, because the top of the concrete is usually levelled off well below the ground surface. It appears, however, that if the concrete was finished off as high as possible, without the use of shuttering, time would be saved by eliminating the difficulty of laying bricks below ground. It is found from inspection that the quality of concrete used in strip foundations is extremely variable, but nevertheless some of the lower grades encountered are normally quite suitable as far as the amount of cement is concerned. The aggregate is commonly too uniformly graded. Even on shrinkable clays, the concrete does no more than replace a shrinkable by a non-shrinkable material and therefore a grading of about 1:3:6 appears to be good enough.

The question is often raised as to whether it is possible to avoid going so deep as 3 ft. in shrinkable clays by reinforcing the ordinary strip foundation so as to form a beam, say 12 ins. deep, 18 to 24 ins. below ground. It has been found that the extent of removal of support in such cases, especially near trees, induces stresses in a beam of this depth so large that independent of the amount of steel used the deflections are too great to avoid house cracking. The stresses are almost as large as those which arise from the worst mining subsidence and the beam needs to be 24 to 30 ins. thick. It is therefore cheaper to dig out the extra depth and to leave out the steel.

(*b*) Reinforced Concrete Rafts: The raft foundation inherently provides a floor base and site concrete and it may be used with suitable modifications under almost all reasonable site conditions. It is equally suitable for supporting most types of house superstructure. The amount of excavation required is small, particularly on level sites, and the excavation is easily carried out in the course of soil-stripping the site by mechanical plant in daily use, such as scrapers. A clean working base is provided in the early stages of construction.

Now that the solid floor is in fairly wide use it seems likely that the raft will become more popular as a foundation. At the mome t the solid floor is frequently used in conjunction with strip footings, but as mentioned earlier it seems more logical and cheaper to make the floor into a raft. On the non-shrinkable soils the raft presents no particular problems. It needs to be about 6 ins. thick structurally and only needs light reinforcement for crack control together with some steel in the bottom under the walls. If local soft spots occur in the ground somewhat heavier reinforcement may be required. It is advisable to extend the raft about 12 ins. beyond the external wall line to spread the load, avoid the effects of frost action, and the possibility of gardeners accidentally removing soil from under the wall (see right-hand side of Fig. 6). Where the soil is shrinkable, summer drying in the absence of trees will probably extend in diminishing amount under the edges of the raft for a distance of about 3 ft. To prevent the clay from shrinking away from the slab under the heavy external wall it seems advisable to extend the raft as a continuous unit for a distance of 4 to 5 ft. outside the wall. This extension also serves the purpose of a clean path (see left-hand side of Fig. 6). The raft needs to be about 6 ins. thick with crack control steel over the interior portions, whilst in the extension and under the external walls the top steel should be capable of withstanding full path loads; some steel is necessary in the bottom in case of pressure from the clay when it swells. Self-supporting prefabricated reinforcement units may be used to save time on the site. No observations are yet available on the behaviour of these rafts on shrinkable sites, because so far as is known none has been built. Structural rafts of this type are often thickened or stepped near the external walls which usually involves hand digging and shuttering. This does not appear to be necessary and it seems preferable to make the main raft as plain as possible; any necessary changes in level may be made on the top side where concreting may be carried out later under cover. The weak porous concrete filling indicated in Fig. 6 provides better insulation and is convenient for bedding floor heaters and other services, but it could be left out.

(*c*) Piles and Beams: In the course of site exploration work a small earth auger has been used extensively for boring in heavy clays. This is a very efficient tool and is the simplest method of penetrating deeply. It seems, therefore, that a cheap practical method of founding below the shrinkage zone in heavy clay would be to use a short bored pile as an alternative to the extended raft mentioned previously. The Station is at the moment carrying out full scale loading tests on short bored piles and on experimental beams to span between them, so as to estimate the most economical arrangement in terms of a normal brick superstructure. In addition, the Field Test Unit of the Ministry of Works are studying the design of a suitable mechanical post-hole auger, since none exists in this country. This work is by no means complete at the moment, but a tentative arrangement is indicated in Fig. 7. The piles might be at 8 to 10 ft. centres under the external walls, with one or two under heavy internal walls. In relation to the strip footing on clay the excavation is considerably reduced, the relatively high bearing capacity is utilized and there appear to be no inherent difficulties in mechanizing the excavation. The extended raft is, however, an obvious competitor. The pile and beam system is well suited to the traditional brick dwelling with heavy external walls and is quite conveniently used with suspended floors. Similar arrangements may be used on weak compressible soil sites when the piles may extend considerably deeper to a thick firm stratum. Driven piles may be used in this connection.

(*d*) Isolated Pad Footings: Isolated footings are most suited to structures which possess

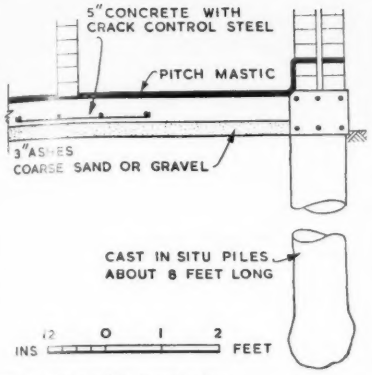


Fig. 8: Shrinkable foundation.

structural frames, particularly those with suspended floors, that concentrate the load to definite points. Framed timber buildings and many of the new prefabricated houses possess these features. The depth of the footing on the various soils may generally be based on the suggestions made previously. Some of these structures are quite flexible and can withstand larger deformations than the brick dwelling, so that on shrinkable clay it may be permissible to found shallower than 3 ft. The size of the footing is often determined by the smallest sized hole that a labourer can dig rather than by the bearing capacity of the soil. In order to reduce excavation and concrete and save time the holes could be bored out as indicated in Fig. 1. Where a framed structure sensitive to deformation is built on a shrinkable clay site, isolated bored piles without beams may be conveniently used.

6. **Summary:** Various types of foundation suitable for dwelling houses are discussed in detail and several modifications to traditional types are suggested.

The suggestions discussed are summarized as fully as possible in relation to the soil conditions in Table 1. Some of the proposals are tentative, because the Station's field experience is largely restricted to the London suburbs.

7. **Acknowledgements:** The author wishes to acknowledge the assistance of his colleagues at the Building Research Station, particularly those who gave assistance exploring the various house sites. The work was carried out as part of the programme of the Building Research Board and the paper is published by permission of the Director of Building Research.

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DISCUSSION

Mr. F. J. Samuely said that there were three problems which were of interest to him. The first concerned the depth of the foundation, the second the water, and mainly the ground water, and the third was that of finding out what the ground was really like. It had often been remarked during the war that when houses were bombed, neighbouring houses seemed to stand up to the blast quite well, but later had to be taken down as well, because they began to crack. It was said that that was due to the foundations being too shallow, and foundations of houses usually were rather shallow. He would like to ask whether 1 ft. 6 ins. was really sufficient to give protection against frost, and, if it was sufficient in this latitude, whether it was sufficient further North, in the Midlands and in Scotland. He would like to ask whether it was generally worth while trying to save money on such foundations or whether it would be better in all circumstances to go down to 2 ft. 6 ins. or 3 ft., even if the clay was of an unshrinkable nature and even where there was sand or gravel. In shrinkable clay Mr. Ward had suggested going down to 3 ft. in all circumstances unless piling was used, and presumably piling would be very much more expensive than an ordinary strip footing of 3 to 5 ft. in depth.

His second question referred to the awkward problem of water. Unfortunately, the water did not depend on the rainfall in all circumstances. It might indirectly depend on the rainfall in the neighbourhood of rivers or streams, where the water rose and the ground water rose with it when there was rainfall higher up. It might also depend on ebb and flow of tide. He had in mind particularly some low-lying ground in the neighbourhood of the Thames Estuary, where there was a constant fall and rise of water under ground, and sometimes nearly up to the ground level, even when there was no rainfall at all.

One problem which always faced the designer was whether in all circumstances the foundation should be brought down to the lowest water level or not. Obviously the only method of avoiding all question of shrinkage was to bring the foundation down to the lowest water level, but that was not always possible, because it might be as much as 10 ft. down. On the other hand, if that was not done there was always a danger of cracks, because when the water fell in the substrata, the whole of that substrata might shrink, even if it was gravel, simply for the reason that there was a constant movement which made some displacement possible. If some general indications could be given about how to deal with cases of that sort, it would be of interest.

Thirdly, he would like to know how the designer really knew about the ground. There were all sorts of possibilities. One could use trial holes, or small bore-holes of a few inches, or large bore-holes of, say, 15 ins. Furthermore, during the last few years some electric methods had been developed, particularly where the question of mining subsidence arose, to find out whether there were any hollow spaces or any great changes in ground levels.

Mr. W. A. Allen said that Mr. Ward had referred to trees and to the distance from the foundations which was necessary, and to the problem of fast-growing trees which removed the water from the soil faster than the water would get back into it. An interesting aspect of the matter was that if a person planted trees which were of a fast-growing kind and so caused damage to somebody else's foundations, the owner of the property on which the trees stood was legally liable. That was an important point, and he thought that Mr. Ward would confirm that.

With regard to the raft foundation and the short-bored pile foundation, he wondered why the raft had found such substantial support. If one were to extend the raft three or four feet beyond the ordinary confines of the house, it would almost double its area in the case of the ordinary house of 1,000 sq. ft. with 500 sq. ft. on the ground floor, because it would bring the area up to between 925 and 930 sq. ft., and might well be more expensive than the short-bored pile. Piles removed only about 3 cu. ft. per pile. They could be cut at the rate of a quarter of an hour apiece by manpower, and the amount of concrete to go back was very small by comparison with the amount used in the case of the strip foundation. He thought that Mr. Ward, by suggesting the short-bored pile foundation, was putting forward a virtually revolutionary house foundation for this country.

Mr. S. G. Kadleigh asked whether the control of moisture in the soil over the site area had been explored from the economic point of view. It seemed to him that there were two ways of tackling the matter. One was by leaving the water in the soil to go wherever it would, and the other was to isolate the site and control the moisture, and then one could do what one liked on the site.

His second question was a more general one on soil classification. One of the great difficulties was that in the masses of infor-

mation from all over the world on the properties and classification of soils there were very few common denominators. On the question of site exploration, it appeared that no two people considered the same soil in the same terms. He would like to ask Mr. Ward not only whether there was a standard classification but also whether it was possible to give the properties of the soils related to that classification, and especially the bearing properties and the drainage properties.

Mr. E. S. Hartley said that the average small house was built with about 5 ft. of paving at the back, and perhaps 7 or 8 ft. of paving at the side for the garage space. The only place where rain could get down to the foundations was usually in the front, and some owners insisted on having that paved as well. He wondered whether in cases where the clay was compressible owing to the lack of moisture it would not be better to keep paths away from the building and leave 2 or 3 ft. of soil next to the building, so that the moisture could get down to the footings.

Mr. Cooper, referring to the fact that in the last illustration shown by Mr. Ward there was a note to the effect that the piles were from 6 to 8 ft. deep in shrinkable clay, asked whether there was any real point in that or whether that was a special case. In other words, would a pile of 5 or 6 ft. be ample as a rule?

Mr. L. Wood said that in shrinkable soils, such as London clay, Mr. Ward advocated extending the raft considerably outside the walls in order to get the load of the main walls at such a point as to have relatively little moisture movement. Mr. Hartley had suggested that it would perhaps be better to keep paving away from the walls so as to keep moisture near the walls. Personally, he thought that the design and suitability of a raft for any building depended rather on the distance from the outside walls that moisture movement in the clay extended, and he would like to know whether any investigations had been made on that aspect of the problem.

If, for example, serious moisture movement at a depth of, say, 18 ins. extended only 2 or 3 ft. within the outer walls, a very cheap raft could be constructed by putting a strip foundation of restricted length 3 ft. within the outer walls and cantilevering a fairly shallow raft over it; but that, of course, did depend on accurate information about the extent to which moisture movement outside passed under the building where the surface was entirely protected by the floors from the drying action of the sun and the access of rainfall.

Mr. T. Coulton asked what were the minimum distances for species of trees other than the notorious poplars.

Mr. W. H. Ward, in reply, said Mr. Samuely had referred to damage to houses adjacent to others which had been bombed. If a large crater was produced in the ground 10 ft. from a house, on a heavy clay, for example, there would be considerable deterioration of the clay within the immediate zone of the bomb crater, and the soil underneath an adjacent house was liable to creep towards that bomb crater if it was left open and exposed to the weather for a long time.

On the question of the depth necessary from the point of view of frost, he had never seen a case where frost caused damage to a house underneath the foundations, but he had no experience of what might happen in, say, a Highland village, and probably a depth of 1 ft. 6 ins. would not be sufficient there. Broadly speaking, however, in the built-up areas of this country, where 90 per cent of the houses were to be found, whilst the frost might penetrate one or two inches below that level it was not going to persist there for very long, and even if one did get a fraction of an inch of frost heaving under a foundation, it was not likely to be anything like so drastic in its effects as shrinkage in a shrinkable clay, because there would be more or less uniform lifting all round the outside of the house.

The question of ground water level and its fluctuation was a very difficult one to deal with, especially in relation to shrinkable clays, because, for example, in London clay he doubted whether it was possible really to define what the water level was. Underneath the London clay there was chalk, which immediately below was completely empty of water, and therefore there must be a flow from the surface slowly right through the clay. That amounted to an infinitesimal fraction of an inch a year. In the upper zone of the London clay, which was highly fissured, due to seasonal drying and shrinkage, there was a relatively permeable soil, and the water there was in fairly active movement, and it was that which contributed to the flow in the rivers. In the upper zone of the London clay, therefore, there was a water level which followed the cracks and fissures in the clay, whilst independently within that system there were clods of clay which had water pressures all their own and which might be quite independent of the water in the cracks outside. He preferred to regard the question of fluctuation of water level in a clay as a change in water content. If one adopted that point of view one would find it easier to understand problems of shrinkage. The only cases where one would find fluctuating ground water levels adjacent to rivers causing trouble in houses were where there was a very compressible soil such as peat underneath the house, either immediately underneath, or even, say, 20 ft. down; because as the water fluctuated in level the effective weight of the soil on top of the peat might change to double its original value, and consequently there would be a sudden increase in the load on the peat, which would go down like a spring and come up again when the water rose.

Mr. Samuely had raised the question of site exploration. In connection with houses, if the material was easy to auger with a post-hole auger, he suggested that one should be used. Where there was gravel one would use a trial pit, which was always the best method in general, because one could see what the soil looked like and take samples and test them. They had had very little experience of the electrical method at the Building Research Station. They did borrow an apparatus and tried it out but in a rather haphazard manner; but the main trouble with that method, as with all geophysical methods, was that it was necessary to have very contrasting values in the properties of the ground condition of which one was detecting. Electrical methods required very large changes in the conductivity if those changes were to be detected, and the big trouble was that where the soil was saturated with water it was the conductivity of the water which controlled everything, and therefore one was more likely to find the water level than the change in strata. The method had been used, he believed, for detecting caverns in limestone country, but the whole trouble with such methods was to find out what the answers meant once they had been obtained.

The important point about the pile and beam system was that at the moment it was only tentative. He thought that there could be no doubt, however, that in comparison with the strip foundation the pile method was going to be considerably cheaper. If English plant manufacturers could be induced to make a satisfactory mobile boring machine similar to those used by the American Army, for example, one would find that type of foundation being used all over the country.

Mr. Kadleigh had raised an interesting point in connection with the movement of moisture. Presumably one way of controlling the moisture—and in clays of the type which he had in mind it was largely determined, in his opinion, by the weather rather than by what went on down below—would be to cover the whole area completely with a membrane which isolated the whole of the ground from the weather. That was more or less what happened under the centre of a house where site concrete or a raft was used ; there was almost no change underneath, except the initial change which was obtained by providing the shelter, but as far as he could see that was fairly small. Obviously those were the conditions which must be approached in closely built-up areas such as that round Portland Place, though the houses there all had basements and were well below any seasonal changes.

Mr. Kadleigh had also raised the question of soil classification, and personally he agreed with him that throughout the world in all the various sciences which came in contact with the soil there were a hundred and one different soil classifications. However, during the last few years the Codes of Practice Committees had been at work, and almost the first code to be tackled by his own section at the Building Research Station was on site investigation. That covered the whole question of soil classification, and provided a uniform system of soil classification, at least among engineers; whether the other professions would accept it or not he did not know. When that was published it should clear up many of these problems.

TYPES OF FOUNDATIONS IN RELATION TO TYPICAL SOILS

Soil	Site Treatment	A — Strip Foundation	B — Raft	C — Pile and Beam
	Always strip organic top soil	Width / Depth	Thickness / Reinforcement / Extension	
1. **Strong, non-shrinkable** Rock, chalk, sand, gravel	None		Mainly as solid floors	
Very sandy or gravelly clay		12 in. necessary / 12 in.-18 in.	Nominal 6 in. / Nominal 12 in. / 12 in.	Unnecessary
Loose sand, gravel		As above, if compacted by ponding, ramming or rolling	Alternative without compaction	Possible
2. **Soft clays, silts, peat** of uniform thickness (i)	Spread and roll 3 in. of coarse ashes, sand or gravel. Place concrete immediately on exposure of bearing surface	Only use if bearing capacity is sufficient up to width of 36 in. Generally found as near surface as possible, except when shrinkable place 36 in. deep	6 in.-9 in. / Full top and bottom / 12 in. / 48 in.-60 in. if shrinkable	Use when (A) inadequate and thick firm strata within 10 ft. of surface
(ii) of varying thickness	Do.	Unsuitable	Possible if tilt not excessive	To deeper thick firm stratum
3. **Shrinkable firm clays** at surface e.g. Woolwich and Reading, London, Gault, Weald, Kimmeridge, Oxford and Lias clays	Spread and roll 3 in. ashes, sand or gravel. Place concrete immediately on exposure of bearing surface		Mainly as solid floors	
		12 in.-18 in. necessary / 36 in.-42 in. in areas with 30 in. rainfall or less	Nominal 6 in. / Nominal in 48 in.-60 in. centre. Full top and bottom near outside walls	About 8 ft. deep at about 8 ft. centres. (Subject to confirmation on load carrying capacity)
4. **Mining subsidence**	Spread and roll 12 in. sand	Unsuitable	Up to 30 in. / Full top and bottom / 12 in.	Unsuitable
5. **Poorly compacted filling** e.g. variable and end tipped	Depends on material, level up with ashes, sand or gravel	Avoid, unless economical to extend to solid	6 in.-9 in. / Full top and bottom / 12 in. 48in.-60in. if shrinkable	Suitable if fill does not contain large boulders. Hand excavation and brick piers then more suitable
6. **Well compacted filling** with density control	As 1 or 3 depending on material			

Mr. Hartley had spoken about the use of paving round the house in relation to the growing of trees nearby. Obviously if one paved the area between the tree and the house one would make things worse by cutting off all the rain that fell on that area and drawing it off to a drain somewhere else, and so the roots of the tree would start drawing out moisture in a zone which was already deficient in moisture, and there would be worse trouble than ever. It was, of course, quite useless to use a raft of any type for a house where there were fast-growing trees nearby, because the same effects would be obtained unless the raft was made extremely rigid, which involved considerable expense.

Mr. Cooper had questioned the depth of 6 to 8 ft. for piles. In his own judgement 8 ft. was about the depth required to obtain sufficient bearing for the pile. It was a very reasonable depth to bore and it also gave a reasonable spacing of the piles. It was necessary to put the piles in between windows and doors where the main loads came down, so that the position of the piles was more or less determined by the shape and size and the position of the windows of the house.

With regard to Mr. Wood's point about the extended raft, the reason for suggesting the figure of 4 to 5 ft. was that it was known that the amount of movement below a depth of 3 ft. was fairly small, and it was, he believed, more or less impossible to suck water from a clay in any direction from a distance of much more than 3 ft. For example, plant physiologists said that the roots of a tree would not suck water for more than 3 ft.; beyond that the root would go to the water instead of the water coming to the root. Those indications suggested that the maximum penetration of shrinkage laterally underneath the raft would be of the order of 3 ft., but to be on the safe side he had increased it to 4 or 5 ft., which would give a path of reasonable dimensions.

The question had been raised of what was a safe distance with other types of trees. Fundamentally, very little was known about the activities of the root systems of various trees. The poplar and the elm were definitely the worst offenders, and it seemed to be the trees which were liable to throw out suckers which were particularly bad. The subject required a great deal of further work.

THE NEXT A.S.B. LECTURE AT THE R.I.B.A.

Wednesday 5 March at 6 p.m.

'Design in Relation to Man Hours and Mechanization'

By Mr. J. F. Eden, B.Sc. (Eng.), A.M.I.Mech.E., Division of the Chief Scientific Adviser, Ministry of Works

Synopsis

Design of houses a complex problem, with many opposing factors; designer has to find best compromise. Control measurements taken by Ministry of Works. Three divisions of labour in building: (A) on site; proportion of labour spent on various trades in traditional brick houses; (B) materials costs; (C) labour in transport. Expenditure of labour on individual operations in preparation, actual work, and clearing up. Effect of number of operations on site organization. Crane movements. The designer's problems. Labour-saving devices, and operations which might be mechanized.

Practice Notes

Edited by Charles Woodward [*A*]

MINISTRY OF TOWN AND COUNTRY PLANNING. The Minister has made an addition to the Town and Country (Airfields) (Interim Development) Direction dated 18 March 1946, by which all excavations within a radius of 500 yards from the perimeter of an airfield are to be notified. (S.R. & O. 1946 No. 2138. Town and Country Planning, England and Wales, Interim Development.) Price 1*d.* by post 2*d.*

MINISTRY OF WORKS. The Ministry have issued an Interim Economy Memorandum for the use of paint in building construction and maintenance.

The Memorandum deals in considerable detail with the type of paint that may be used on various materials and points out that it is realized that the recommendations necessitate a considerable departure from good practice and a general lowering of standards which may in some instances lead to increased maintenance costs.

The Memorandum can be obtained at the Ministry of Works, Lambeth Bridge House, S.E.1.

MINISTRY OF HEALTH CIRCULARS.

76/46. A supplement to this Circular points out that builders are specifying thin gauges of copper sheet (e.g., as low as 0.010 and 0.008) which are not normally in production. The recommendation of the Housing Manual is 24 S.W.G.=0.022 (see Technical Appendices H.109 and 110). 26 S.W.G.=0.018 can be accepted, but gauges lower than this should not be specified. Not only are they lower than standard, but their manufacture is liable to curtail production. Local authorities are asked not to specify particular makes of patterns of electrical components of fitting unless they have verified that they are in production, and to instruct their contractors to accept suitable alternatives where they anticipate delay in obtaining delivery. Manufacturers will advise what alternatives are available if unable to supply the article ordered. There is a shortage in the supply of electrical conduit piping. In the meantime local authorities would be well advised to consider the use of T.R.S. cable, which is in good supply, for the whole or a part of the installation, where the requirements of the Supply Undertaking permit. A number of local authorities have already adopted this course.

233/46. This Circular deals with the Airey Rural house and local authorities are asked to place their orders for the house or increase orders already placed. Changes have been made in the specification described in Circular 86/46 and these are detailed in the appendices to the Circular 233/46. It is proposed to make a flat rate grant for the Airey Rural house under Section 17 of the Housing (Financial and Miscellaneous Provisions) Act, 1946. The grant represents the estimated average excess cost of the Airey Rural house over the current average cost of a traditional house. The grant will be fixed at £175. In the case of houses built on the original Bills the amount of the grant will be reviewed in the light of the approved tender cost, excluding abnormals, in individual cases.

MINISTRY OF EDUCATION. The Ministry have issued Circular 134 dated 19 December 1946, which sets out the Educational Building Programme for 1947 and indicates its size and scope. It has been decided to plan for an expenditure of £24 million during 1947, excluding agency work done by the Ministry of Works, but including work done under civil licence.

The appendices to this Circular contain information based on the 'bay-unit' system of construction with diagrams, together with suggestions as to the use of materials.

TOWN AND COUNTRY PLANNING BILL, 1947. This Bill was read a first time in the House of Commons in December last and the following are the chief provisions of the Bill as now drafted.

The Bill repeals the Advertisements Regulation Acts of 1907 and 1925, the Town and Country Planning Act, 1932, parts of the Restriction of Ribbon Development Act, 1935, the Town and Country (Interim Development) Act, 1943, and parts of the Town and Country Planning Act, 1944.

The Bill sets up a new planning system to meet present-day requirements and deals with development values in land.

The planning authority is to be the councils of counties and county boroughs or a combination of these bodies in a Joint Planning Board, and this new planning authority will prepare a county plan. The county council will consult with the local authority in the preparation of the plan. There will be guidance from the Central Government so that the plan will accord with local and national requirements.

The planning authority will carry out a survey of their area and prepare a plan within three years from a date which will be fixed by the Minister of Town and Country Planning after the Bill becomes an Act. The Minister is to approve the plan, and before he does so a public local inquiry is to be held or some other appropriate hearing. The plan is to be reviewed at five-yearly intervals.

Control of development will be exercised in much the same way as under present law, except that after the development plan has been approved by the Minister, *application must be made for any development.* Until the plan is approved interim development control will operate, and proposals will be considered in the light of what is proposed to be put into the plan.

Land will be made available for development included in the plan by giving local authorities wider powers to buy land compulsorily for leasing to the private developer. The plan will indicate land as 'subject to compulsory purchase' which is likely to be required for development within a ten years' period, and at the five-yearly review of the plan further land can be added for compulsory purchase. Local authorities will have wider powers to carry out development themselves.

Power is taken in the Bill to require the alteration or removal of existing buildings or the prohibition of existing *uses* which do not conform to planning requirements. The control of advertisements is extended to the whole county, and will not, as at present, be confined to a local area.

A summary of the planning provisions in the Bill is as follows :—

No development may take place without permission. The existing use of land may be continued but if the owner is restricted from continuing such use compensation will be payable.

When permission to develop is refused no compensation will be payable. When development is permitted any increase in the value of the land due to such development will revert to the State, and the increase must be paid or secured before the development is carried out. Any increase in the value of the land which accrues without development remains with the owner.

The value of the land to the owner will therefore be the value having regard to its existing use, and the owner will lose the development value. A purchaser will pay the owner the value of the land based on its existing use and will pay the increased value due to development to a Central Land Board which is set up under the Bill.

'Development' means the carrying out of building, engineering, mining or other operations in, on, over or under land, and the making of any material change in *the use* of any buildings or land. The use as two or more separate dwelling houses of any building previously used as a single dwelling house would be regarded as a material change in the use of the building. The use for the display of advertisements of any external part of a building which is not normally used for that purpose will be regarded as a material change of use of that part of the building.

The 'development plan' prepared by the planning authority may define the sites of proposed roads, public and other buildings and works, airfields, parks, pleasure grounds and other open spaces, or allocate areas of land for use for agricultural, residential, industrial or other purposes. Land may also be designated for compulsory purchase if required by any Minister, local authority or statutory undertaker or any land which is to be redeveloped as a whole including extensively war damaged land or land of bad layout or obsolete development or any other land likely to be required for securing its use as proposed by the plan.

The planning authority may order the discontinuance of any existing *use* of a building or demolition or alteration, if that is necessary on planning grounds. Compensation is payable for the depreciation in the value of the land.

The powers under existing Acts relating to trees and woodlands and buildings of architectural or historic interest are re-enacted in the Bill.

The display of advertisements will be controlled by regulations to be made by the Minister having regard to the interests of amenity or public safety. The size, appearance, position and the sites of advertisements will be governed by the regulations, and consent of the planning authority will be required in respect of the class of advertisement specified therein. A tribunal will be set up to hear appeals from the refusal of consent. The planning authority will be able to require the removal of advertisements within a prescribed period and to order the discontinuance of the *use* of any site for the display of advertisements which was being so used on the date the regulations came into force. Expenses incurred by complying with such an order will be recoverable from the planning authority, provided that the advertisement existed on 7 January 1947. No compensation will be payable in respect of the depreciation in the value of land in consequence of an order for discontinuance of the use of the land for the display of advertisements.

Planning schemes made under existing law are to be repealed and replaced by the provisions of the Bill, and the Minister may issue an Order for winding up the scheme. The provisions in a scheme relating to trees and woodlands, advertisements, street works and the suspension of a local Act or by-laws or regulations are to remain in force until replaced by the new procedure.

Agreements between local authorities and landowners made under the 1932 Act restricting the use of land are to be repealed.

When the Minister has made a 'development order' in respect of a 'development plan' the Order must be laid before Parliament and either House may resolve that the order be annulled.

The Central Land Board to be set up under the Bill will deal with the payment of compensation and the collection of development charges. Where hardship is caused by the owner losing the development value of the land, a claim may be made to the Board who have the administration of a fund of £300,000,000 for this purpose. The Treasury will prepare the scheme setting out the basis on which payments are to be made, and the Scheme will be submitted to Parliament for approval by affirmative resolution of both Houses.

Development along roads will be merged into planning control. A developer will therefore only apply to the planning authority in respect of such applications instead of, as now, having to apply to the highway authority under the Restriction of Ribbon Development Act.

In cases where the land has become incapable of reasonable beneficial use and planning permission to develop is refused, the owner may require the district council or county borough council to buy the land. On the other hand the Minister may direct that permission be granted.

Where permission is refused for certain classes of development and the land is therefore depreciated in value, compensation is payable. Such classes include alterations to buildings in existence on the 'appointed day', enlargements up to 10 per cent of the cubic content of the original building and changes of user. ('Appointed day' means such day as may be appointed by the Minister after the Bill becomes an Act.)

Existing legislation for the preservation of buildings of special architectural or historic interest is re-enacted in the Bill.

The local authority will be able to take action where waste land has become an eyesore.

Land on which development has been authorized under existing legislation but has not been carried out, will come within the proposed planning proposals. Development charges and compensation for depreciation will be taken into account.

Compulsory Purchase. A development plan may designate land as subject to compulsory purchase if required by a Minister, local authority or a statutory undertaker, or land which is to be developed or redeveloped as a whole, or an associated overspill area, or any other land required for the purpose of the development plan. Such land will be purchased under the Acquisition of Land Act, 1946, which provides for speedy procedure. This speedy procedure will only be applied where land is required by a Minister, local authority or statutory undertaker.

Local authorities may acquire land by agreement for planning purposes. The Minister's consent is required.

Compensation for the compulsory purchase of land will be limited to the 'existing-use value' and will be calculated on the 1939 basis. War damaged land which has had its value for compulsory purchase certified as 'after damage value' under the 1944 Act, will have this value modified so that it corresponds to the 'existing-use value', but a claim may be made to the Central Land Board for an additional payment.

Development Value. Development value means the difference between the two following amounts :—

The 'unrestricted value' of the land (that is the market value of the land not subject to the restrictions in the Bill, the owner being able to realize the development value of the land. If the existing use of the land is disturbed or the value of other land is depreciated by the development, a deduction is made) ; and

The 'restricted value' (existing-use value) of the land. (That is the value subject to the restrictions in the Bill, with the existing use continuing and with no power to develop.)

Development value for this purpose will be calculated having regard to the condition of the land on the 'appointed day', and the calculation will be made on prices current immediately before 7 January 1947, this being the date the Bill was published. Compensation payable under present law when a planning scheme came into force will be taken into account.

Contraventions of existing planning law. In respect of buildings erected during the war which contravene existing planning law, the local authority must decide within three years after the 'appointed day' whether they intend to take any action against the contravention. If they do, the development value is accordingly affected; but if no action is taken within the three years the building is deemed to be sanctioned and can only be removed on payment of compensation.

Existing interim permission. Permission to develop given after the passing of the Interim Development Act of 1943 (22 July 1943) will come under the provisions of the Bill where the development has not been carried out. Where the development is carried out after the 'appointed day' it will be subject to the development charge. Buildings in course of erection on the 'appointed day' will be regarded as complete and will not be subject to development charge.

Where within ten years before the publication of the Bill a contract for development has been submitted under by-laws, no development charge will be made if the development is satisfactory and is allowed to proceed. Equally there will be no compensation payable for depreciation.

Application of the Bill to London. Plans for the County of London including the City will be prepared by the London County Council after consultation with the Common Council of the City, and the Metropolitan Borough Councils. The County Council must also consult the Common Council before granting or refusing permission to develop on land in the City. The execution of the plan so far as the City is concerned will be the responsibility of the Common Council.

Compensation for abortive expenditure. Where development was in accordance with a planning scheme under present law or with a permission under interim development prior to the passing of the 1943 Act, and an application made within six months of the 'appointed day' is refused under the provisions of the Bill, compensation may be payable for abortive expenditure.

Redevelopment Areas and New Town Areas. No compensation or development charge is payable in respect of land purchased by a local authority for development or redevelopment as a whole, or by a development corporation under the New Towns Act. Payment may, however, be required by the Minister to be made to the Central Land Board if the redevelopment as a whole results in an increase in value.

Land of local authorities, statutory undertakers and charities. No compensation or development charge is payable in respect of land held on the 'appointed day' by local authorities for statutory purposes or by statutory undertakers or land held for the purpose of a church, hospital, school or other charity.

The Crown. The Crown is exempt under the Bill, but a private lessee of the Crown comes within its provisions.

The Board of Trade. Permission to develop land by the erection of an industrial building of any class prescribed by regulations to be made by the Board of Trade, cannot be granted by the planning authority unless the Board certify that the development can be carried out consistently with the proper distribution of industry.

The Minister of Transport. The Minister of Transport may authorize, by Order, the stopping up or diversion of a highway so that development may be carried out in accordance with the development plan.

Street Works. Where it is so designated on the development plan, land can be declared by a local authority to be a private street. As soon as the street has been made up or widened it is to become a highway repairable by the inhabitants at large. Acts relating to street works in the locality will be applicable and the cost of the street works will be recoverable from frontagers.

BUILDING LICENCES

The present limit of £10 that may be spent on a single property without a licence is extended for a further six months from 1 February to 31 July 1947. As at present, £2 may be spent in each of the six months in addition to the £10 but this sum is not cumulative. (S.R. and O., 1947, No. 74.)

From 1 February any work carried out by *unpaid labour* will require a licence if the amount is in excess of the limit of £10, but licensing authorities are given a discretion as to the issue of a licence where an owner proposes to use unpaid labour and has materials in his possession.

As from 1 February the local housing authority may issue licences for all work of a cost not exceeding £100 on any class of premises, and in addition may issue licences for all work to private dwellings without limitation of cost. The term 'private dwelling' does not include hotels, hostels, boarding houses or holiday camps.

Certificates of Essentiality will no longer be required for work to occupied houses in excess of £100, and in the case of a shop with dwelling accommodation the local authority will deal with that class of premises. Arrangements for the grant of W.B.A./H. priority are to remain unchanged.

Licences for work costing over £100 on any other class of premises will be issued by the Regional Licensing Officer of the Ministry of Works.

In future licences will describe the work in detail, or a schedule may be attached to the licence. A copy of the licence is to be sent to the builder and the original to the building owner.

A licence for a new house can contain the selling or letting price, and this is done under the power given by the Building Materials and Housing Act, 1945. The selling price includes the value of the land, roads and services. Where the land is freehold its cost must be taken into account, and if that is not known its value will be assessed by the local authority. Leasehold land will be valued on the capitalized value of the ground rent. Where street works will be subsequently carried out the estimated cost of such works should be deducted. The maximum value of work licensed will therefore be the selling price less the cost or value of the land and of any road or services already provided.

Directions to Local Authorities are given by Ministry of Health Circular 8/47 dated 20 January 1947, and the Minister of Works will issue notes for the guidance of the licensing authority, being a revision of the previous notes C.L.A. 3.

Circular 10/47 issued by the Ministry of Health deals with painting work in the London Civil Defence Region in connection with maintenance and repair. Licences may be issued outside the quotas where the work is to be carried out by firms wholly engaged in painting and decorating, providing the work does not require the use of tradesmen other than painters and providing there is no shortage of painters for priority work. Paint in this connection includes distemper, special processes and plastic paints.

NATIONAL JOINT COUNCIL FOR THE BUILDING INDUSTRY

Working Rule 6 which deals with daily travelling and lodging allowances has been revised by the National Joint Council, and can be obtained at 11 Weymouth Street, W.1. The revisions are dated January 1947.

Book Reviews

Puritan Architecture and its Future, by *Martin S. Briggs* [*F*]. 8½ ins. 21 pp. + xxii pls. Lutterworth Press, 1946. 8*s.* 6*d.* This latest contribution from the pen of Martin Briggs is a welcome amplification of the articles in THE BUILDER two years ago.

When discussing the title of this book with a colleague he expressed the opinion that the Puritans were more connected in his mind with architectural destruction than the development of any particular style of architecture, and though there may be some truth in this belief the first half of this book, entitled 'The Puritan Tradition,' goes far to dispel any doubts that there was a definite contribution by the Puritans to the architecture of worship of the 16th and 17th centuries and later.

The second part devoted to 'The Future' demonstrates clearly that pseudo-mediæval forms and ornamentation are by no means necessary for worship, but that good proportion, simplicity—in fact good manners—can achieve an atmosphere of devotion just as well as cusps, crockets and pointed arches.

The historic treatment of the subject in the first half is the natural approach, and is full of interesting matter, which may be fresh to many readers and all the more interesting thereby.

A recent volume, *The Methodist Church Builds Again*, is a useful corollary to the second half of Mr. Briggs' book, and though it is primarily concerned with guidance for the future, the arguments for purity and simplicity in designing the new churches of that denomination might well be reinforced by a study of 'The Puritan Tradition'.

Dealing in the second part with the building of Nonconformist churches in the near future, Mr. Briggs gives much good advice and many indications of what and what not to do, which might well be studied and acted upon by the ecclesiastical architect of any denomination.

A smattering of architectural lore as recommended by Mr. Briggs for the theological student may not be altogether welcomed by his professional brethren, though if it tends to a better appreciation of the various problems to be solved the result must be on the whole to the good!

The selection of examples is catholic in the best meaning of the word—the worst Victorian species being suggested rather than illustrated. Of particular interest are the photographs of interior details.

HUBERT LIDBETTER [*F*]

The Methodist Church Builds Again, by *E. Benson Perkins and Albert Hearn.* 8½ins. 102 + iii pp. Epworth Press, 1946. 6*s.* This volume explains itself in the foreword as an attempt to open the way to an intelligent approach to the high task of church building.

Although it includes a useful series of plans of various types of Methodist churches and church buildings for the guidance of all—presumably including the architect—this is essentially a book for the layman by laymen, though whether it is quite true to apply this label to Mr. Benson Perkins is a question.

The suggestions designed to make people think seriously before embarking on church building projects are plentifully leavened with good advice.

'Economy in furnishing, as in the fabric of the building, should be in simplicity of design' is perhaps as good advice as any. HUBERT LIDBETTER [*F*]

Claude-Nicolas Ledoux, 1736-1806. By *Marcel Raval & J.-Ch. Moreux.* 252 pp. including pls. Arts et Metiers Graphiques. (1945), Paris. 23*s.* 6*d.*

This monograph is the first of a projected series called *Les Architectes Français* : it is to be hoped that it will be followed by many others of equal merit and importance.

The production is as good as might be expected in the immediate post-war period of shortages. It is copiously illustrated and the documentary text is at once an excellent general survey and a detailed account of most of the more important work of Ledoux. In many instances the authors have taken what must have been considerable trouble to obtain early photographs (or in their absence, drawings and engravings) to illustrate the many buildings from the hand of Ledoux which no longer exist. The book is, in addition, well indexed and edited.

Claude-Nicolas Ledoux was an original thinker; and the results of his intensive attack on the problems of his day are reflected both in his architecture as executed and in his writings and published designs for schemes which remained only as paper projects. He was a revolutionary, not only politically, but in architecture and his treatises entitled *L'Architecture considerée sous les rapports de l'art, des moeurs et de la législation* and *Architecture* contain, in addition to architectural and town-planning projects and ideas, much detailed comment on the function of the architect and a social message for the times.

The life-span of Ledoux, covering the second half of the eighteenth century, naturally found the roots of his architectural development in the pre-revolutionary period and his early work reflected the style and feeling contemporary to the reign of Louis XVI. But with the passing of time, and with his new outlook on the revolutionary developments around him, his art became more and more original, even to the extent of producing architectural abstractions that seem to us now to border the realms of pure fantasy. His project for *La Ville Sociale de Chaux* seems to marry realism and abstraction as almost equals; realism in the general plan-attack or in an individual building such as the *Eglise;* almost pure abstraction in the drawings for the *Cimetière*, emphasized as the latter are by the '*-élévation du cimetière*', engraved by Bovinet, which attempts to elevate the project into the imaginary realm of the seven spheres of classical mythology. The *maison du Directeur de la Loue* of the second *Chaux* scheme and the design for a *Maison des Gardes Agricoles à Meaupertuis* are further examples of this extreme break-away from tradition and an entry into a state of pure expressionistic architecture. In addition to the many executed works, town houses, theatres and chateaux, one of the most interesting sections of the book under review is devoted to the *Propylées de Paris* (1785-1789). The scheme was never completed, but of the 46 designs prepared, many of which were executed, only four major *barrières* remain. These main-road posts and customs-barriers are all illustrated, annotated and related to the map of Paris, and the survey undoubtedly shows the immense ingenuity and original character of the designer's mind.

Ledoux had few, if any, real pupils, but he had some imitators. If his work derived inspiration from that of Romain and from Palladio and Piranesi, then it would seem also apparent that Durand, Dubut, Boullée and even de Thomon (at Leningrad) owe something to the work of Ledoux.

It is impossible in this short review adequately to give an impression of the effect that this collection and record of Ledoux work may have on a receptive mind which is also influenced by to-day's obsession with ' modern ' expression in architecture. The reader should be referred to the book—he will be startled, entertained, enlightened and perhaps experience a modicum of humility.

S. ROWLAND PIERCE

A Report from the City Architect of Liverpool to the Housing Committee on Speke, a Self-Contained and Protected Community Unit. 4to. pp. 44.

The Report was submitted by our President in October last and it gives me the utmost pleasure to be asked to write a short review. I have known the President by repute for so many years that it is a continual surprise to me that it was not until 1942 that we actually met.

His work for housing in Liverpool can be described as one of the greatest social contributions an architect has ever made. I, for one, did not realize quite how good the work was until, while engaged on camouflage in the earlier part of the war, I was told that the Housing Estate at Speke, of which I had never heard, presented, by its geometrical outline, a vulnerable target immediately adjacent to a large aircraft factory. I was instructed to write to Mr. Keay to ask if the roofs of the houses and the concrete roads could be darkened by means of a stain which would wash out in course of time and leave them as before. At that time Liverpool was suffering very severely from a series of night raids, which prevented our meeting for some time, but eventually we met in Leamington. It was agreed to darken the roofs and to paint the walls with a dark coloured distemper. As a matter of fact, the Estate was never afterwards hit, although some considerable damage had been done to it earlier.

After my appointment as Architectural Adviser to the Merseyside Regional Planning Committee I had ample opportunity of studying housing work in Liverpool in considerable detail and have no hesitation in saying that Speke represents an advance on anything in the way of housing that I have yet seen. The President is a courageous man and is not to be bullied into building small or cheap houses by anyone, and he is backed by the special powers of the Liverpool Corporation Act of 1936, which gives the Corporation the right themselves 'to erect and maintain not only houses but shops, offices, warehouses, factories and other buildings'. Apparently it also permits them to build houses for varying income groups, so that the iniquitous policy of segregating people of identical interests and incomes in one area is overcome.

The plan of the township is very geometrical and, one might almost say, dull, to anyone who is not conversant with the site, but the latter is absolutely flat and therefore does not call for any kind of curly roads, which would, indeed, be an anachronism.

The young of Liverpool and the Merseyside are particularly prone to cause the destruction of trees and any kind of amenities with which they are supplied, and it is to be hoped that the flowering trees that are planted on the secondary roads will be protected by the community from these acts of vandalism.

Other points in the Report worthy of attention are that the whole of the street furnishings will be designed by the architect and that all front fences and gates are to be dispensed with, that houses of larger size than the Committee have erected elsewhere are to be included, and that an increased number of garages is to be provided, not adjoining individual dwellings but in groups.

The number of shops, four per thousand of the inhabitants, appears to be small when one considers that the average is about one per cent. This is no doubt accounted for by the nearness of Liverpool, which in the past was grossly over-supplied with shopping facilities.

Every word of the Report shows the vision that was so palpably lacking in development schemes after the 1914-1918 war, when such places as Becontree were built.

Having long advocated the erection of three-storey houses as a far better solution of the problem than the erection of flats of similar height, it is a pleasure to find that Mr. Keay proposes three-storey houses at about 20 ft. centres in this development. The duality and continual repetition of two-storey houses has ruined many an estate, and three-storey buildings will help considerably to overcome this monotony.

It is hoped that the scheme will have the abounding success that it deserves and that the citizens of Liverpool will gradually, by the influence of Mr. Keay and his colleagues, become accustomed to live in well-designed communities and worthy homes.

One other word: the President believes in building for permanence and the minimum of upkeep costs. He regards the sash-window as a good window, and brick as a first-class building material. He is unafraid of innovation in the functional shape of public buildings, but like the reviewer, considers that houses are still used for much the same purposes as they always have been and that there is no real reason why their shape, plan or fenestration should be completely different from houses of earlier periods. Consequently, the Liverpool Housing Estates, many of which are now more than twenty years old, still look as well as or better than when they were erected.

C. H. JAMES

The Limitation of Building Heights. Georgian Group. 4to. pp. 10. London. 1946. Price 1*s*.

This pamphlet, issued by the Georgian Group, puts forward certain town planning proposals affecting building heights, street widths, angles of light and the right relationship between commercial and domestic buildings.

Notes and Notices

NOTICES

The Seventh General Meeting, Tuesday 25 February 1947 at 6 p.m. The Seventh General Meeting of the Session 1946-47 will be held at 6 p.m. on Tuesday 25 February 1947 for the following purposes :—

To read the Minutes of the Sixth General Meeting held on 11 February 1947; formally to admit members attending for the first time since their election.

Mr. Edward Armstrong [*F*] to read a paper on ' Urban Housing—Planning for Amenity '.

Light refreshments will be provided before the meeting.

The Eighth General Meeting, Tuesday 11 March 1947 at 6 p.m. The Eighth General Meeting of the Session 1946-47 will be held on Tuesday 11 March 1947 for the following purposes :—

To read the minutes of the Seventh General Meeting held on 25 February 1947; formally to admit members attending for the first time since their election.

Mr. J. H. Forshaw, M.C., M.A., B.Arch. (Lvpl.), M.T.P.I. [*F*], to read a paper on ' Housing and the Architect '.

Light refreshments will be provided before the meeting.

Session 1946-47 Minutes V. At the Fifth General Meeting of the Session 1946-47, held on Tuesday 28 January 1947, at 6 p.m.; Sir Lancelot Keay, K.B.E., President, in the chair.

The meeting was attended by over 500 Members and guests.

The Minutes of the Fourth General Meeting, held on 14 January 1947, were taken as read, confirmed and signed as correct.

The following Members attending for the first time since their election were formally admitted by the President :—

AS ASSOCIATES

J. P. Allison; N. J. Aslan; A. H. Bruce; R. H. Bulmer; J. A. Clark; H. D. Dawson; F. S. Knight; W. C. Lock; Bruce Martin; G. M. Maw; J. M. Maxwell; M. H. Parry.

AS LICENTIATES

Johannes Schreiner; Harry Smith.

Professor W. G. Holford, B. Arch. (L'pool) M.T.P.I. [*A*] having read a paper on 'New Towns', a discussion ensured and on the motion of The Rt. Hon. Clement Davies, K.C., M.P. (Chairman of the Advisory Committee on London Regional Planning) seconded by Lieut.-General Sir Wilfrid Lindsell, G.B.E., K.C.B., D.S.O., M.C. (Chairman of the Crawley New Town Advisory Committee) a vote of thanks was passed to Professor Holford by acclamation and was briefly responded to.

The proceedings closed at 7.45 p.m.

R.I.B.A. Annual Dinner 1947. The Annual Dinner will take place on Friday 21 March 1947, at 7 for 7.30 p.m. in the R.I.B.A. Henry Florence Hall, 66 Portland Place.

The demand for tickets has already greatly exceeded the number of seats available and it is regretted that no further tickets can be issued.

British Architects' Conference Dublin, 11 to 14 June 1947. The next Annual Conference of the R.I.B.A. and its Allied and Associated Societies will be held in Dublin from 11—14 June 1947, inclusive.

The Royal Institute of the Architects of Ireland have in hand the preparation of a most attractive programme and particulars will be issued in due course.

All members and students of the R.I.B.A. and all members and students of the Architectural Association and the Allied Societies are cordially invited to attend the Conference.

It is expected that there will be a large attendance of members from all parts of the country and they are urgently requested to arrange for their hotel accommodation at the earliest possible date so as to avoid the risk of disappointment.

When writing for accommodation members should mention that they are attending the Architects' Conference and ask to be allotted rooms reserved for this purpose in the name of the Royal Institute of the Architects of Ireland.

The Executive Committee of the Conference have kindly furnished the following list of hotels with charges:—

Hotel	*Rooms* Dbls.	Sgls.	*Tariff* B'room and Breakfast
Shelbourne ..	7	6	15/6 daily.
Central ..	7	6	10/6 to 12/6 daily.
Royal Marine, Dunlaoghaire	10	—	16/6 daily.
Gresham ..	10	5	15/6 daily.
Royal Hibernian	30	10	18/6 daily.
Four Courts ..	7	2	10/6 daily.
Clarence ..	2	—	12/6 daily.
Standard ..	5	—	11/6 and 13/6 daily.
Jurys ..	10	5	12/6 daily.
Buswells ..	2	2	11/6 daily.
Ivanhoe ..	4	2	11/6 daily.
Ross's Hotel, Dunlaoghaire	4	6	16/6 daily.
Earlsfort Hotel..	2	1	10/6 daily.

PASSPORTS: Members are reminded that visitors to Eire must possess either a passport or a travel identity card and *will not be allowed to leave the United Kingdom unless they produce one of these documents.* Particulars and the necessary application forms are obtainable from the Passport Office, Dartmouth Street, London, S.W.1 or from the Branch Passport Offices in Liverpool and Glasgow.

Cessation of Membership. Under the provisions of By-law 21 the following has ceased to be a member of the R.I.B.A.

As Licentiate

Potts: Alexander Robert Balliol.

Model Form of Conditions for Architectural Competitions. At their meeting on 14 January the Council approved the recommendation of the Competitions Committee that the following paragraph be added to Clause 2 of the Model Form of Conditions for Architectural Competitions:—

> In the event of the death of the Assessor or, in the case of a Jury, of one of the Architect-Assessors before the completion of the competition, or of his being unable to continue to act through illness or some other cause, the Promoters will, in consultation with the President of the Royal Institute of British Architects, appoint another architect to act in his place and to carry out the duties of Assessor as set forth in these Conditions and Instructions.

Building Surveying Examination. The R.I.B.A. Examination qualifying for candidature as Building Surveyor under Local Authorities will be held at the R.I.B.A. on 7, 8 and 9 May 1947.

Applications for admission to the examination must be made not later than 19 March 1947 on the prescribed form to be obtained from the Secretary R.I.B.A.

Royal Incorporation of Architects in Scotland ANNUAL CONVENTION 1947. The Annual Convention of the Royal Incorporation of Architects in Scotland will take place at Stirling on Friday and Saturday 20 and 21 June.

COMPETITIONS

Proposed Technical College : Peterborough

Peterborough Joint Education Board invite architects of British nationality to submit in open competition designs for new buildings to be erected at Peterborough for a technical college.

Assessor : Mr. T. Cecil Howitt, D.S.O. [*F*].

Premiums : £500, £250 and £150.

Last day for submitting designs : 30 June 1947.

Conditions may be obtained on application to the Chief Education Officer, Education Offices, Peterborough.

Deposit : £2 2s.

Village Planning Competition. The Central Landowners' Association invites architects to submit, in competition, designs for the development of four villages.

Assessors : Prof. Sir Patrick Abercrombie, P.P.T.P.I. [*F*]; Mr. G. Langley-Taylor, M.T.P.I., F.S.I., F.L.A.S. [*F*]; Mr. Thomas Rayson, F.S.A. [*F*].

Premiums: £250, £200, £150 and consolation prize (or prizes) of £100.

Last day for submitting designs: 30 June 1947.

Conditions may be obtained on application to the Central Landowners' Association, 58 Victoria Street, S.W.1.

Deposit: one guinea.

Competition for the Extension of the Fife County Council Buildings. The County Council of Fife invite architects of British nationality resident in Scotland to submit designs for alterations and extensions of County Buildings, Cupar, Fife.

Assessor: Mr. A. G. R. Mackenzie [*F*].

Premiums: £500, £300 and £200.

Last day for submitting designs: 31 March 1947.

Conditions may be obtained on application to J. M. Mitchell, Esq., County Clerk, County Buildings, Cupar, Fife.

Deposit, one guinea.

COMPETITION RESULT

L.P.T.B. Shelter Competition

1. Mr. D. Dex Harrison, Dip.Arch.(Leeds), A.M.T.P.I. [*A*].
2. 'Arcon' and Mr. O. Safir.

GENERAL NOTES

The Tite Prize and the Soane Medallion Competitions, 1947

The attention of intending competitors is called to the fact that the Preliminary Competition for the *Tite Prize* will be held in London and at centres in the provinces on *Monday* 31 *March* 1947. The closing date for the submission of forms of application is the 14 *February* 1947.

The Tite Prize, a certificate and the sum of £35, is confined to *Probationers* and *elected Students* of the R.I.B.A., and elected Students of Dominion Allied Societies who have passed the R.I.B.A. Intermediate or equivalent examination, or produce certificates from responsible architects to the effect that they have reached the required standard. Students who have passed the R.I.B.A. Final or equivalent examination or who will have passed the R.I.B.A. Final or equivalent examination at the time of the Final en loge competition are not eligible to compete.

The Soane Medallion, and the sum of £120, is confined to members of the R.I.B.A. and of the Allied Societies Overseas and elected Stu-

dents of the R.I.B.A. and of the Allied Societies Overseas, who have passed the R.I.B.A. Final or equivalent examination, or who have produced certificates from responsible architects to the effect that they have reached the required standard, and in accordance with the new arrangements for the competition only one en loge competition will be held. This will be held in London and at centres in the Provinces on Tuesday 22 July 1947. The closing date for the submission of forms of application is the 16 *May* 1947.

Forms of application for admission to the Competitions may be obtained at the R.I.B.A., 66 Portland Place, London, W.1.

Members Serving with the Forces

Beaumont: E. W. [*A*] Major R.E. Mentioned in Despatches.

Cook: L. W. [*A*] F/Lt. R.A.F. Mentioned in Despatches.

Newman: W. S. [*L*] Major R.E. Mentioned in Despatches.

School of Planning and Research for Regional Development

The following are the successful candidates in the examinations at the end of the fourth of the Three Months Completion Courses in Town and Country Planning at the School of Planning and Research for Regional Development, 34/35 Gordon Square, W.C.1. The course is open to men and women from the Forces, who have reached a required standard in the War Office Correspondence Course. Success in the Examinations entitles the candidates to professional membership of the Town Planning Institute subject to a period of practical experience and certain professional qualifications.

Distinctions were obtained by: J. C. Ratcliff, A.R.I.B.A., A.A. Dip. (Hons.) (Sussex); Nancy Northcroft, A.R.I.B.A., A.N.Z.I.A., B.Arch.N.Z. (New Zealand); A. C. Sutherland, A.R.I.B.A., Dip. Arch. (Glasgow).

Other successful candidates were: W. Windyer Morris, B.A. Geog. (Dorset); J. M. Gorst (Nottingham); L. F. Baker, A.R.I.B.A., B.A. (Hons.) Arch. (London); D. E. Johnson, A.R.I.B.A. (London); D. B. Peace, A.R.I.B.A. (Derbyshire); E. S. Sibert (Middlesex); R. F. Knott, A.R.I.B.A. (London); J. A. Hepburn, P.A.S.I. (Bucks.); J. W. Dark, A.M.Inst. Mun. & Cy. Eng. (London); J. T. Pearse (Warwickshire); N. P. Allen, A.R.I.B.A., A.A. Dip. (London); J. O. Spender (Middlesex); H. H. Kane, A.M. Inst. Mun. & Cy. Eng. (Manchester); R. V. Crowe, A.R.I.B.A., A.A. Dip. (Hons.) (London); N. Dickenson, A.R.I.B.A. (Staffs.); W. G. Maddison, A.R.I.B.A., A.A. Dip. (London); T. Woodman (Hants.); F. N. Hendry, A.M. Inst. Mun. & Cy. Eng. (Yorks.); S. H. Nicholls (Cornwall); M. Eker, A.R.I.B.A., B. Arch. (London).

Leverhulme Research Fellowships, 1947

Application is invited for Fellowships and Grants in aid of research. The Fellowships and Grants are intended for senior workers who are prevented by routine duties or pressure of other work from carrying out research. They are limited to British-born subjects normally resident in Great Britain. In exceptional circumstances the Trustees may waive the condition as to residence. The Trustees are also prepared to consider applications from groups of workers engaged upon co-operative programmes of research particularly from those engaged upon long-distance programmes or in institutions in which the normal facilities for research have been curtailed by the war.

The duration of the awards will not normally extend over more than two years or less than three months and the amount will depend on the nature of the research and the circumstances of the applicant. Forms of application may be obtained from the Secretary, Dr. L. Haden Guest, M.C., M.P., Leverhulme Research Fellowships, 7, Bedford Row, London, W.C.1.

Easter Vacation Field Study of Ghent

The Field Studies Department of the Institute of Sociology is planning for Easter 1947 a study of the city of Ghent in Belgium. The Institute announces that Mr. Lewis Mumford's visit to England last year has inspired fresh interest in the study of cities and it is hoped to recruit a group of architects, town planners, students of art and craftsmanship, sociologists, historians and others interested in the culture of cities.

The study will last a week and will combine first-hand observation and record making by all members of the group, a study of individual buildings and social institutions housed in them, and of family housing and households, lectures on various aspects of the development of Ghent and on general methods of city study. There will be day by day assessment and discussion of results, involving frequent contact with experts in the subjects studied.

The Field Studies Department regards the Netherlands cities as a good criterion for students and others interested to pursue the understanding of city development and yet sufficiently contrasting to justify first-hand and careful observation of the city as a whole and in detail, particularly the city's natural features, its streets, quarters and individual buildings.

Accommodation has beeen reserved at a leading Ghent hotel, and the dates which are suggested as being most convenient for travel and to the hotel are: Tuesday, 1 April; travel from London via Dover and Ostend. Tuesday, 8 April; return to London. These dates might be altered if unsuitable for those wishing to join. Reservations on trains and in hotel must be made far in advance and application should be made to the Hon. Organizer of Field Studies, Le Play House, Ledbury, Herefordshire.

The all-in fee for this meeting, inclusive of lectures, tutorial guidance, use of maps, books, records, travel and hotel charges (with service) will be 20 guineas.

Correction: A printer's error is regretted on page 185 of the 29 January JOURNAL illustrating the Swarbrick Solar Location Chart in the article *The Influence of Daylight and Sunlight on Functional Design of School Buildings*, by Mr. J. Swarbrick [*F*]. The second sentence of the caption to that illustration should read 'It also records Apparent Solar Time by *circles*, at intervals of 20 minutes throughout the day'.

Notes from the Minutes of the Council

MEETING HELD 14 JANUARY 1947

New Year Greetings: The President extended his cordial good wishes for 1947 to members of Council and members of the staff.

The President: A vote of hearty congratulations to the President on the award of K.B.E. conferred on him in the New Year Honours List was carried with acclamation.

New Year Honours: The Secretary reported the following awards in the New Year Honours List:

Baron: Sir Ernest Simon [*Hon. A*].
K.C.V.O.: Sir Alfred Munnings, P.R.A. [*Hon. F*]; Mr. Evelyn Shaw, C.V.O. [*Hon. A*].
C.B.E.: Mr. F. Jackman [*F*], Senior Architect, Ministry of Education; Mr. E. M. Joseph [*F*], lately Director of Works and Buildings, N.A.A.F.I.
M.V.O.: Mr. M. W. Matts [*L*].
Knight Bachelor: Mr. E. G. Savage, Education Officer to the L.C.C.
K.C.B.: Mr. H. C. Emmerson, Permanent Secretary, Ministry of Works.
C.B.: Mr. H. E. Aldington, Chief Highway Engineer, Ministry of Transport.
C.B.E.: Mr. J. T. B. Sandercock, Vice-Chairman, N.F.B.T.O.

It was agreed that the cordial congratulations of the Council should be sent to the recipients of these awards.

Appointments:

London Gas Undertakings (Regulations) Act, 1939: R.I.B.A. Representative on Committee to consider Draft Regulations: Mr. Stanley Heaps [*F*].

B.S.I. Technical Committee *SFE*/22: Closed Stoves: R.I.B.A. Representatives: Mr. H. Hilton Wright [*A*], Mr. J. A. Pinckheard [*A*].

Practice Committee: Mr. D. H. McMorran [*F*] (in place of Mr. C. F. Martin, Vice-President).

Codes of Practice Sub-Committee convened by the Institution of Gas Engineers: R.I.B.A. Representative: Mr. H. Victor Kerr [*F*] (in place of Mr. F. C. Button [*F*]).

Royal Gold Medal, 1947: In accordance with the terms of By-law 62 the Council elected Professor Albert Edward Richardson, R.A., M.A., F.S.A [*F*], as Royal Gold Medallist, 1947.

Report of the Architectural Science Board: The Council considered the report of the Architectural Science Board and approved the reconstitution and formation of Study Groups as follows:—

Study Group No. 1—Building Needs: To study points affecting standards of design of buildings for which the community is in the position of client.

Study Group No. 2—Technical: To study existing research and its dissemination and use in architectural practice, especially the research programme of the Scientific Advisory Committee of the Ministry of Works.

Study Group No. 3—Dimensional Standardization: To consider and report on dimensional standardization in the light of the Official Report B.I.O.S. 575 prepared by the Ministry of Works Assessors' Team in Germany.

Study Group No. 4—Building Economics: To consider and report on the results of Government investigations into the application of scientific method to the ascertainment and control of building costs.

Competitions—Procedure in the case of Illness or Death of an Assessor in a Competition: The Council approved the recommendation of the Competitions Committee that the following addition be made to Clause 2 of the Model Form of Conditions:—

'In the event of the death of an Assessor or, in the case of a Jury, of one of the Architect-Assessors before the completion of the competition, or of his being unable to continue to act through illness or some other cause, the Promoters will, in consultation with the President of the Royal Institute of British Architects, appoint another architect to act in his place and to carry out the duties of Assessor as set forth in these Conditions and Instructions'.

Christmas Holiday Lectures for Boys and Girls : The Secretary reported that the recent series of Christmas Holiday lectures given by Mr. G. A. Jellicoe [*F*], had been most successful and had been attended by large and enthusiastic audiences.

A cordial vote of thanks to Mr. G. A. Jellicoe for his valuable work was passed.

Membership : The following members were elected : As Honorary Corresponding Member, 1; as Fellows, 4; as Associates, 23; As Licentiates, 16.

Election: 11 March 1947: Applications for Election were approved as follows: As Honorary Fellow, 1; as Fellows, 8; as Associates, 17; as Licentiates, 37.

Election: 24 June 1947: Applications for Election were approved as follows: As Associates (Overseas Candidates), 6.

Students: 117 Probationers were elected as Students.

Applications for Reinstatement: The following applications were approved:

As Associate: Francis Anthony Johnson.

As Licentiate: Alfred James Manton.

Resignations: The following resignations were accepted with regret:

Thomas Riley Clemence [*F*], Colonel Arthur Easton, T.D., J.P. [*Retd. F*], Albert Dennis Bumpstead [*A*], Mrs. Hilda Cowell [*A*], Hall S. Metcalf [*A*], Samuel Hutton [*L*], James Sandford Kay [*L*], Frank Langley [*L*], Thomas Stewart Purdie [*L*], Clement Horner Stott [*L*].

Applications for Transfer to Retired Members' Class under By-law 15: The following applications were approved :

As Retired Fellows; Josiah Auty, Thomas Keightley Cobb, John Alfred Fletcher, Arthur Jessop Hardwick, James Hartley, Thomas Frank Hawkes, John Mortimer Sheppard, Alec Smithers, Harry Tatham Sudbury, James Richardson White, Wallace Wood.

As Retired Associates; John Cooper Ainsworth, Harry Bannister, Edward Ernest Barks, William Ernest Emerson, Edwin Finn, James Grieve, Edwin Gunn, Percival William Hawkins, George Victory Lidbury, Alfred James Peyto, Herbert Ryle, Llewellyn Ebenezer Williams, Roland Henry Liebreich Cock.

As Retired Licentiates; Jack Blanchard, John Harold Burton, Campbell Featherston Cargill, Edward John Conway, Herbert Geake, Harry Heathman, Roderick John Mules, Hugh Ovenden, Arthur Benjamin Packham, S. Norman Shrimpton, Frederick John Southgate, Trevor John Tatham, Harold Taylor, George Tolley.

Obituary: The Secretary reported with deep regret the sudden death of Mr. Joseph H[illegible] [*F*], Chairman of the Practice Committee and a former President of the Architectural Association and member of Council.

He also reported with regret the death of the following members:

Dr. Dirk Frederik Slothouwer [*Hon. C.M.*].
Joseph Watson Cabré [*F*].
Ernest Frank Ferry [*F*].
William Everard Healey [*F*].
George Arthur Lansdown, J.P. [*F*].
Mr. Lansdown was a past member of the Practice Committee.
Francis John Garlick [*Retd. F*].
Arthur Henry Ough.
Mr. Ough was a past member of the Council and of the Allied Societies Conference.
John Williamson [*Retd. F*].
Walter Henry Woodroffe [*Retd. F*].
Robert James Beswick [*Retired Member of the Society of Architects*].
Edgar Charles Gentry [*A*].
Euan William Harkness [*A*].
John Francis Shortall [*A*].
Philip Humphry Wyatt, O.B.E. [*A*].
Louis Antonio Hayes [*Retd. A*].
Charles Frederick Ellis [*L*].
Frank Henry Land [*L*], killed on Active Service.
Clarence William Porter [*L*].

Membership Lists

ELECTION: 14 JANUARY 1947

The following candidates for membership were elected on 14 January 1947.

AS HON. CORRESPONDING MEMBER (1)

Hitchcock: Henry-Russell, M.A. (Harvard), Middletown, Connecticut, U.S.A.

AS FELLOWS (4)

Budgen: Percy Graham [*A* 1930], Cardiff.
Jury: Archibald George [*A* 1940], Taunton.
Parsons: Leslie Harry [*A* 1932].
Rutter: William Arthur, O.B.E. [*A* 1914].

AS ASSOCIATES (23)

Bowness: Rodger Haigh, Leeds.
Bulmer: Robert Harold.
Clough: Robert Taylor, Keighley.
Cooper: Cecil John, Dublin.
Crisp: Raymond Miles.
Currey: Ronald.
Evans: Elizabeth (Miss), Cardiff.
Giffard: Colin Carmichael, B.A. [Cantab].
Hallam: Arthur, Wallasey.
Hardy: Kenneth Oswald Walter.
Kenyon: John Christopher, Knaresborough.
Knight: Frank Stewart, Wincanton.
Lindars: Leslie William.
Loasby: Eric, Kettering.
Mackenzie: Robert Walker Rannie, Edinburgh.
Marsden: Tom Lowe, B.A., Oldham,
Martin: Bruce.
Noall: Norman McKirdy.
Pritt: Albert, Blackpool.
Roche: Eamoun Kevin, Dublin.
Sharp: Peter Edward, Nottingham.
Tickell: Richard Carton, Heswall.
Vincent: Leonard Grange.

AS LICENTIATES (16)

Arnett: Francis Albert Ernest.
Coleman: John Norman.
Collier: Edwin Walter.
Cortis: Walter Nugent.
Judges: Alfred Charles, M.B.E.
Knapp: Douglas Eric John, Bath.
Lewis: Kenneth Francis, Belfast.
Merriott: Alfred Edward.
Micklewright: Wilfrid Louis.
Pentelow: Francis Howell, Weston-super-Mare.
Rowbottom: Stanley Edgar.
Rowell: Montague.
Sharpe: Kenneth Leslie.
Smith: Charles George William.
Wattie: James.
Wood: Thomas Edward.

ELECTION: 11 MARCH 1947

An election of candidates for membership will take place on 11 March 1947. The names and addresses of the candidates, with the names of their proposers, found by the Council to be eligible and qualified in accordance with the Charter and By-laws, are herewith published for the information of members. Notice of any objection or any other communication respecting them must be sent to the Secretary, R.I.B.A., not later than Saturday, 8 March 1947.

The names following the applicant's address are those of his proposers.

AS HONORARY FELLOWS (2)

Attlee: Rt. Hon. Clement Richard, C.H., M.P., Prime Minister, 10, Downing Street, S.W.1. Proposed by the Council.

Crawford and Balcarres: The Earl of, Balcarres, Colinsburgh, Fife, Scotland. Proposed by the Council.

AS FELLOWS (8)

Bright: George Edward [*A*.1930] 28 Great Castle Street, Oxford Circus, W.1; 28 Links Side, Enfield West, Middlesex. G. S. Lewis, Prof. H. O. Corfiato and A. T. Scott.

Haird: Tom William [*A*.1922] 6 Millstone Lane, Leicester; Cropston, nr. Leicester. William Keay, F. H. Jones and J. S. Harrison.

Marsh: Stanley George Roff, A.M.T.P.I. [*A*.1934] Moulsham, Thrift, Chelmsford. P. W. Adams, Howard Robertson and K. M. B. Cross.

Reynolds: Francis Maurice, B.A. (Hons. Arch.) [A.1932] 9 Albert Square, Manchester 2; 25 Pownall Road, Wilmslow, Cheshire. Benjamin Waterhouse, J. S. Beaumont and C. G. Agate.

Shanks: George Ferguson [*A*.1925] Messrs. Wylie, Shanks and Wylie, 204 West Regent Street, Glasgow, C.2; 7, Lubnaig Road, Glasgow, S.3. A. G. Henderson, G. A. Boswell and T. J. Beveridge.

Underwood: Walter [*A*.1933] Messrs. Wylie, Shanks and Wylie, 204 West Regent Street, Glasgow, C.2; 4 Bowmont Terrace, Glasgow W.2. Joseph Weekes, William McCrea and W. J. Smith.

Wylie: Edward Grigg [*A*.1920] Messrs. Wylie, Shanks and Wylie, 204 West Regent Street, Glasgow, C.2; 8 Queensborough Gardens, Glasgow, W.2. A. G. Henderson, G. A. Boswell and John Watson.

Wylie: Frederick Robert [*A*.1927], Messrs. Wylie, Shanks and Wylie, 204 West Regent Street, Glasgow, C.2; 18 Oakfield Avenue, Glasgow, W.2. A. G. Henderson, G. A. Boswell and John Watson.

AS ASSOCIATES (17)

Atkinson: Thomas William (Arch. Assoc. (London)): 407 Nelson House, Dolphin Square, S.W.1. George Fairweather and the President and Hon. Secretary of the A.A. under the provisions of By-law 3 (b).

Blade: Eric Alfred [Special Final Exam.], 130 Morley Hill, Enfield, Middlesex. T. E. Scott, T. S. Tait and Francis Lorne.

Brock: Jack Cecil [Final Exam.] 'Westcliffe,' 123 West Malvern Road, West Malvern. Herbert Jackson, L. C. Lomas and C. W. Box.

Brown: Reginald Wallace William [Special Final Exam.], 68 Gloucester Avenue, Grimsby, Lincs. G. R. Dawbarn, T. E. Scott and G. M. Trench.

Crawford: Ernest Lorraine [Final Exam.], 21 Alwyne Grove, Shipton Road, York. Prof. W. B. Edwards, R. N. Mackellar and H. E. Jarvis.

Crook: Alec Charles [Final Exam.], 5 Westminster Road, Leicester. F. Chippindale, A. F. Bryan and J. S. Harrison.

Gabites: Allott Lorimer (Arch. Assoc. (London)): London House, Guilford Street, W.C.1. Prof. Basil Ward, Grey Wornum and G. R. Dawbarn.

Gillgrass: Miss Eleanor Rosemary (Leeds Sch. of Arch.), 'Craiglands,' The Drive, Roundhay, Leeds, 8. Applying for nomination by the Council under By-law 3 (*d*).

Leicester: Brian Leslie (Liverpool Sch. of Arch., Univ. of Liverpool), The Croft, Shut Lane Head, Newcastle, Staffs. Prof. L. B. Budden, B. A. Miller and J. E. Marshall.

McCauley: Francis Joseph (B.Arch.), (Univ. Coll., Dublin), 31 Neville Road, Rathgar, Dublin. Prof. J. V. Downes, J. O'H. Hughes and Vincent Kelly.

Middleton: Leonard Sydney [Special Final Exam.], 38 Lansdowne Road, Rochester, Kent. V. L. Nash, H. M. Luyken and B. C. Sherren.

Poore: Michael Vyvyan Foster [Final Exam.], 20 Chalbert Court, St. John's Wood, N.W.8. B. L. Sutcliffe, E. R. Taylor and G. M. Trench.

Powell: Geoffrey Charles Hamilton (Arch. Assoc. (London)): 16 The Little Boltons, S.W.10. Frederick Gibberd, E. B. O'Rorke and Howard Robertson.

Robinson: Benjamin [Final Exam.], 1 Hepworth Road, Jackson Bridge, New Mill, nr. Huddersfield. Norman Culley, N. R. Paxton and G. H. Foggitt.

Stanley-Morgan: Robert [Final Exam.], 47 York Road, Erdington, Birmingham 23. Applying for nomination by the Council under By-law 3 (*d*).

Whiteley: Stephen Anthony (Leeds Sch. of Arch.), 'Lyndholm,' Holmbridge, Nr. Huddersfield. Applying for nomination by the Council under By-law 3 (*d*).

Yetton: Miss Heather (The Poly., Regent Street, London: Sch. of Arch.), 19 Kings Road, Chingford, Essex. E. C. Scherrer, Alfred Burr and J. K. Hicks.

AS LICENTIATES (37)

Andrew: John Smith, City Architects' Office, City of Leeds Corporation, Leeds, 1; 250 Stainbeck Road, Leeds, 7. F. L. Halliday, A. J. Hope, J. S. Beaumont.

Baglin: Raymond Charles, M.B.E. (Major R.A.), City Architects' Department, Town Hall, Sheffield, 1; 'Sharrow Cottage,' 110 Psalter Lane, Sheffield. W. G. Davies, H. B. S. Gibbs, A. C. Bunch.

Brunton: John Henry (Major R.E.), Messrs. Samuel Jackson and Son, Architects, Dean House, 19 Piccadilly, Bradford; Tanglewood, Woodlands Drive, Rawdon, nr. Leeds. G. D. Harbron, L. A. Reynolds, Allanson Hick.

Calton: Jack Norman (Capt. R.E.), 32 Carlton Crescent, Southampton; 3 Thornhill Park Road, Bitterne, Southampton. Herbert Collins, H. A. Hall, H. C. D. Whinney.

Carr: George, 1 Collingwood Street, Newcastle-on-Tyne, 1; 18 The Drive, Gosforth, Newcastle-on-Tyne, 3. Applying for nomination by the Council under By-law 3 (*d*).

Carver: Owen Philip, Ministry of Works, Abell House, S.W.1; 76 Christchurch Road, S.W.2. K. E. Black, P. M. Andrews, Z. Sirotkin.

Caspari: Peter, 7 Abercorn Mews, Violet Hill, N.W.8; 24 Blenheim Road, N.W.8. K. E. Black, Lieut.-Gen. Sir John Brown, Colonel A. E. Henson.

Dorrance: Thomas William Leslie, City Architects' Department, Edinburgh; 11 Thirlestane Road, Edinburgh, 9. E. J. MacRae, J. R. McKay, C. E. Tweedie.

Frowde: Ernest Harry, L.C.C. Housing and Valuers Dept., County Hall, S.E.1; 4 Carlton Hill, St. John's Wood, N.W.8. R. Wilson, Edwin Williams, W. J. Durnford.

Furness: Herbert Alexander, City Engineer's Office, Corporation of the City of London, 55-61 Moorgate, E.C.2; 53 Ormonde Terrace, Regent's Park, N.W.8. Applying for nomination by the Council under By-law 3 (*d*).

Hackforth: Richard Edgar, Robin Cottage, Westcott, Dorking, Surrey. C. L. Clayton, K. E. Black, A. W. Harwood.

Harmer: Frederick George, Assistant to the County Architect, Springfield, Maidstone, Kent; 11 Birchwood Road, Maidstone, Kent. S. H. Loweth, C. J. Cable, Richard Mellor.

Hinxman: Stanley William, c/o S. G. Scales, Esq., National Provincial Bank Chambers, Terminus Road, Eastbourne, Sussex; 7 Whitley Road, Eastbourne, Sussex. M. Campbell Jones, F. R. S. Yorke, J. F. Howes.

Horne: Robert Sutherland, c/o Messrs. A. E. Cogswell and Sons, F.S.I., Prudential Buildings, Portsmouth, Hants; 29 Salisbury Road, Southsea, Hants. The late Joseph Hill, W. W. Wood, R. E. Enthoven.

Humphrys: Derrick Raymond, 100 Gloucester Place, W.1; N. F. Cachemaille-Day, Eric S. Ambrose and applying for nomination by the Council under By-law 3 (*d*).

Jones: Edgar Arthur, Architect's Dept., Shire Hall, Warwick; 105 Glendower Avenue, Coventry. R. Wilson, L. H. Harrington, H. T. Jackson.

Knight: Robert John, City Architect's Dept., 1 Western Parade, Southsea, Portsmouth; 60 Kyoto Court, Ryewood Lane, Bognor Regis, Sussex. A. C. Townsend, V. G. Cogswell and applying for nomination by the Council under By-law 3 (*d*).

Lofthouse: Benjamin, 86 Fenchurch Street, E.C.3; 441 Hillcross Avenue, Morden, Surrey. S. C. Clark, H. D. Hendry, P. H. Banks.

Maddocks: Leslie Francis Abram (Lieut.-Col.), 10 South Street, Bridport, Dorset: Burton Bradstock, Bridport, Dorset. H. E. Matthews, Cyril Fifield, E. H. Evans.

Marsden: William Eric (Major R.E.), 11 Glenwood Road, Chellaston, nr. Derby. Applying for nomination by the Council under By-law 3 (*d*).

Mayer: Thomas Henry, 311 Oxford Street, W.1; 12 Douglas Drive, Shirley, Surrey. Applying for nomination by the Council under By-law 3 (*d*).

Moorhouse: John, Borough Surveyor's Dept., Deptford; 51 Crookston Road, Eltham, S.E.9. Applying for nomination by the Council under By-law 3 (*d*).

Nield: Rodney Herbert, Middlesex County Council, Architect's Dept., Middlesex House, Vauxhall Bridge Road, S.W.1; The Lodge, Charlwood, nr. Horley, Surrey. C. D. Andrews, C. G. Stillman, H. W. Burchett.

Patefield: Harry Herman, with Harry Webster, Esq., 8 Upper Fountaine Street, Leeds, 2; 16 Duchy Crescent, Heaton, Bradford, Yorks. Eric Morley and the President and Hon. Secretary of the West Yorks. Soc. of Arch. under By-law 3 (*a*).

Pitts: Leslie George, Crown Chambers, Main Street, Bingley, Yorks; Fern Grove, Lady Lane, Bingley. C. Sunderland, N. R. Paxton, G. H. Foggitt.

Robinson: Alfred Gordon, Architect's Dept., L.C.C., County Hall, S.E.1; Fairview, 5 Beaverwood Road, Chislehurst, Kent. Edwin Williams, G. W. Home, F. R. Hiorns.

Scherah: Harold Ineson, Cardigan House, Cardigan Crescent, Leeds, 4; 'Park-Gate,' Mirfield, Yorks. E. E. Morgan and applying for nomination by the Council under By-law 3 (*d*).

Sears: James Edmonds (Capt.), 8 Den Crescent, Teignmouth. T. G. Jackson, J. Challice, E. E. Kemeys-Jenkin.

Stapleton: Jesse Alfred (Capt., R.E.), Chief Engineer Branch, H.Q. Eastern Command; 24 Clifford Road, Hounslow West, Middx. Col. A. L. Abbot, Lt.-Col. Ernest Gee, and applying for nomination by the Council under By-Law 3 (*d*).

Swales: Dennis, Spenborough U.D.C., Surveyor's Dept., Town Hall, Cleckheaton, Yorks; 5 Nettleton Avenue, Mirfield, Yorks. E. E. Morgan, and applying for nomination by the Council under By-Law 3 (*d*).

Toms: Albert Frederick Walter, Engineer and Surveyor's Dept., Uxbridge U.D.C., 263 High Street, Uxbridge; 3 Heath House, Milton Road, Ickenham, Middx. Applying for nomination by the Council under By-Law 3 (*d*).

Wainwright: William Henry, City Architectural Department, Stoke-on-Trent; Aston, Pipe Gate, Market Drayton, Shropshire. E. T. Watkin, and applying for nomination by the Council under By-Law 3 (*d*).

Walker: William Liston, Burgh Surveyor's Office, Dumfries; Rathan, New Abbey Road, Dumfries. J. McLintock Bowie and the President and Secretary of the Glasgow Inst. of Arch. under By-Law 3 (*a*).

Wardley: Stanley Gordon, City Engineer, Surveyor and Architect, Town Hall, Wakefield; 16 Emm Lane, Bradford. G. N. Hill and the President and Hon. Secretary of the West Yorks. Soc. of Arch. under By-Law 3 (*a*).

Warwick: Henry Park, Durham County Architect's Dept., 20 Old Elvet, Durham City; The Terrace, Castle Eden, Co. Durham. J. W. Hays and the President and Hon. Secretary of the Northern A.A. under By-Law 3 (*a*).

West: Daniel, The Gables, Ventnor, Isle of Wight; Post Office, Seaview, Isle of Wight. Ernest Bird, A. E. Geens, A. L. Roberts.

Whittaker: John Ascroft, Borough Engineer and Surveyor's Dept., St. Pancras Town Hall, Euston Road, N.W.1; 25 West Place, Wimbledon Common, S.W.19. H. M. Luyken, V. L. Nash, T. Braddock.

ELECTION: 24 JUNE 1947

An election of candidates for membership will take place on 24 June 1947. The names and addresses of the overseas candidates, with the names of their proposers, are herewith published for the information of members. Notice of any objection or any other communication respecting them must be sent to the Secretary, R.I.B.A., not later than Saturday 24 May 1947.

The names following the applicant's address are those of his proposers.

AS ASSOCIATES (6)

Burgess: Richard William [Passed a qualifying exam. approved by the R.A.I.A.], 20 Gould Street, Campsie, N.S.W., Australia. C. Fowell, Samuel Lipson, B. J. Waterhouse.

Campbell: Keith Shaw [Passed a qualifying exam. approved by the R.A.I.A.], 643 Burke Road, Camberwell, Victoria, Australia. Leighton Irwin, O. A. Yuncken, L. M. Perrot.

Fouché: Victor François [Passed a qualifying exam. approved by the I.S.A.A.], 21 South British Buildings, Field Street, Durban, South Africa. A. S. Furner, E. M. Powers, and applying for nomination by the Council under By-Law 3 (*d*).

Gunaratna: Neville Harris de Silva Abeyesinghe [Passed a qualifying exam. approved by the R.A.I.A.], 19 Dickens Street, Elwood, S.3, Melbourne, Victoria. C. E. Serpell, Leighton Irwin, P. B. Hudson.

Lukacs: Gabor [Passed a qualifying exam. approved by the R.A.I.A.], 158 Bellevue Road, Bellevue Hill, New South Wales. Prof. A. S. Hook, J. C. Fowell, W. R. Richardson.

Symes: Leonard Charles [Passed a qualifying exam. approved by the I.S.A.A.], Lincoln Chambers, Fraser Lane, Pietermaritzburg, S. Africa. G. H. Crickmay, E. M. Powers, G. T. Hurst.

Members' Column

This column is reserved for notices of changes of address, partnership and partnerships vacant or wanted, practices for sale or wanted, office accommodation, and personal notices other than for posts wanted as salaried assistants for which the Institute's Employment Register is maintained.

APPOINTMENTS

Mr. C. H. Cooper [*A*] has been appointed Lecturer in Architecture, King's College, Newcastle-upon-Tyne.

Mr. E. H. Davie [*A*] has been appointed Group Architect, Northern Area, John Lewis Properties, Limited, and will be pleased to receive trade catalogues, etc., at 54 Duchy Road, Harrogate, Yorkshire. (Harrogate 2587.)

Mr. R. Tilsley Green [*F*] has been appointed Deputy County Architect of the Architect's Department, Kent County Council, Springfield, Maidstone.

Mr. T. E. Hall [*A*] has taken up the appointment of Headship of the Department of Building, Sheffield College of Commerce and Technology, Salmon Pastures School, Warren Street, Attercliffe, Sheffield 4, Yorkshire, and will be pleased to receive trade catalogues, etc., at that address.

Mr. John L. Lumsden [*A*] has been appointed Staff Architect to Messrs. Eglinton Hotels (Scot.), Ltd. His private address is 77 McDonald Road, Edinburgh 7, and he will be pleased to receive trade catalogues, etc.

Mr. T. Noel Mitchell [*A*] at present Chief Assistant Architect to the County Borough of Derby takes up an appointment on 1 March 1947, as Education Architect to the County Borough of Middlesbrough. His address from 1 March 1947 will be :—Education Architect, Education Offices, Woodlands Road, Middlesbrough. (Middlesbrough 2424.)

Mr. L. G. Rowlinson [*L*] has been appointed Architect and Housing Officer to the East Retford Rural District Council in succession to Mr. L. Tattersfield [*L*]. Previous to this appointment, Mr. Rowlinson was Chief Assistant Architect to the Tamworth Rural District Council. His new address is Amcott House, 40 Grove Street, Retford, Notts, where he will be pleased to receive trade catalogues, etc.

PRACTICES AND PARTNERSHIPS

Mr. Richard Betham [*A*] (late Lieutenant-Commander, R.N.V.R.) has commenced practice in association with Mr. F. Milton Harvey [*F*] at 3 Raymond Buildings, Gray's Inn, London, W.C.1. (Chancery 8467.)

Mr. C. W. Bodie [*A*] is commencing practice at 211 Glenfrome Road, Bristol 5 (Fishponds 53075) and will be pleased to receive trade catalogues, etc.

Mr. F. H. Brazier [*A*] who practises at 7 Market Street, Altrincham (Altrincham 0844) has entered into partnership with Mr. G. Hartington [*L*]. They will practise under the style of Brazier and Hartington at 7 Market Street, Altrincham.

Mr. Owen Campbell-Jones [*F*] and Mr. Mervyn Campbell-Jones [*F*] announce that as from 1 January they have taken into partnership Mr. Richard N. Wakelin [*A*] and Mr. F. K. Hewitt. The practice will continue under the style of Campbell Jones and Sons, Skinners' Hall, 9 Dowgate Hill, London, E.C.4. (Central 7748.)

Mr. F. J. Fletcher [*A*] and Mr. T. A. Chance [*A*], recently released from the Services, have entered into partnership and are practising as Fletcher and Chance at 49 Portland Square, Sutton-in-Ashfield, where they will be pleased to receive trade catalogues, etc.

Mr. J. Heaton [*A*] has entered into partnership with Mr. T. C. Crawford, and they will practise under the style of Heaton and Crawford, Princes Buildings, 81 Dale Street, Liverpool 2 (Liverpool, Central 0750), where they will be pleased to receive trade catalogues, etc.

Mr. B. R. Hunt [*A*] who now holds an appointment with a Brewery Company will be pleased to receive trade catalogues, etc., 3 The Craiglands, Tunstall Road, Sunderland, Co. Durham.

Mr. Norman Jones [*F*] and **Mr. Leonard Rigby** [*F*] who practise at Williams Deacons Bank Chambers, Lord Street, Southport, are taking into partnership Mr. C. Alleyne Jones [*A*] (late Major R.E.) and they will henceforth practise under the style of Norman Jones, Son and Rigby at the same address (Southport 3455) where they will be pleased to receive trade catalogues, etc.

Mr. C. Talbot Larrington [*A*] has commenced practice at 9 Vaughan Parade, Torquay, and will be pleased to receive trade catalogues, etc.

Mr. D. MacAlister [*L*] is now practising at Wellington Chambers, Cannon Street, London, E.C.4. (Central 4415.)

Mr. G. J. S. Smith [*A*] has entered into partnership with Mr. F. G. Fleury, O.B.E. and Mr. G. G. Dingle, who practise at 22 Lockyer Street, Plymouth (Plymouth 3019) under the style of Body, Son and Fleury. The title of the firm will remain unchanged. The firm has also an office at 36 Victoria Street, Westminster, London, S.W.1. (Abbey 6319.)

Mr. Michael Soimenow [*L*] points out that his correct address is 2 Old Mill Cottage, Liss, Hampshire.

Mr. Gordon Stirrup [*A*] is now practising at 5 Buckingham Place, London, S.W.1, and will be pleased to receive trade catalogues, etc.

Mr. John G. Tulloch [*A*] is now practising at 27 Rutland Street, Edinburgh 1 (Edinburgh 34965) and will be pleased to receive trade catalogues, etc.

Mr. E. T. Watkin [*F*] and **Mr. R. J. Willis** [*A*], practising as Watkin and Willis at National Provincial Bank Chambers, Burslem, Stoke-on-Trent, have taken into partnership Mr. George Cooper [*A*]. The practice will continue under the style of Watkin and Willis.

Mr. Ivan W. Watkin [*A*] has joined with Mr. Charles Piazza [*L*] in practice under the style of Watkin and Piazza at 7 Fernleigh Court, North Wembley (Arnold 4587). They will be pleased to receive trade catalogues, etc., at that address.

Mr. Arthur Wilkinson [*L*] and **Mr. F. W. Davey** [*A*] on release from the Services, are now junior partners in the firm of Laurence M. Gotch & Partners, 21 Bunhill Row, London, E.C.1. Mr. F. W. Davey is in charge of the branch office at 1 Station Street, Lewes, and will be pleased to receive trade catalogues, etc.

CHANGES OF ADDRESS

Mr. H. G. Baker [*A*] has removed from 'Homewood', Warwick Road, Solihull, Birmingham, to 34 Harborne Road, Edgbaston, Birmingham 15, and will be pleased to receive trade catalogues, etc.

Mr. Leslie W. Cook [*A*] (late F/Lt., R.A.F.) points out an error in the entry under 'Changes of Address' on page 108 (Members' Column), December 1946 JOURNAL. His former address was Woodmansterne Lane, Wallington, and he has now removed to 8 Manor House, Manor Road, Wallington. He will be pleased to receive trade catalogues, etc., at that address.

Mr. C. H. Cooper [*A*], formerly of 26 St. Keyna Avenue, Hove 3, Sussex, removed to 49A Fern Avenue, Newcastle-upon-Tyne 2, on 10 February 1947.

Mr. Frederick G. Goodin [*A*], announces his new address, Head of the Senior Building and Evening School, Hammersmith School of Building Arts and Crafts, Lime Grove, London, W.12, and will be pleased to receive trade catalogues, etc.

Mr. T. S. Kay [*L*], formerly of 109 Lichfield Road, Stafford, announces his new address, Deputy Borough Surveyor, Borough of Altrincham, Town Hall, Altrincham. (Altrincham 3251.)

Mr. Frank Roscoe [*A*] has removed from 90 Fulham Road, London, to 'Brownlea', Berkhamsted, Herts.

Mr. Thomas F. Trower [*F*] has removed from Spalding, Lincs, and is now practising at 74 Upper Close, Norwich (Norwich 25854) where he will be pleased to receive trade catalogues, etc.

PRACTICES AND PARTNERSHIPS WANTED AND AVAILABLE

Associate A.A. Dipl. (late Major R.E.), aged 37, seeks partnership or appointment with view to partnership in London. Extensive experience all types of work London and Provinces. Practised from 1933 to 1942 in London. Reply Box 2 C/o Secretary, R.I.B.A.

Old-established practice in Liverpool for sale owing to retirement. Busy office with valuable and long standing connection with banking and insurance companies, etc. Reply Box 3 C/o Secretary, R.I.B.A.

Partner required by architect with well established East Coast (Lincs.) practice. Applicants must have had administrative experience, be capable and energetic. Large capital not essential. Reply Box 7 C/o Secretary, R.I.B.A.

Post with view to early partnership offered to Member with wide experience of Provincial practice (including quantities) in old-established practice in a West Midland County town. Reply Box 9 C/o Secretary, R.I.B.A.

WANTED AND FOR SALE

For Sale. Antiquarian board and T-square, used only once. Offers. Reply Box 6 C/o Secretary, R.I.B.A.

Wanted. (1) Books by W. Shaw Sparrow—'The Modern House', 'Flats', etc. (2) Original drawings in colour by Harold Stevens (1906-1918). (3) 'The Architectural Review', May 1925 (or volume containing same). (4) Batty Langley (Books), 1730. Reply Box 355, C/o Secretary, R.I.B.A.

ACCOMMODATION

Fellow has office accommodation available to let or is willing to share. Large drawing office and reception room; telephone and typewriting available. First floor on main road, London, W.1. Reply Box 8 C/o Secretary, R.I.B.A.

MEMBERS RELEASED FROM THE SERVICES, ETC.

The following members have notified the R.I.B.A. that they have been released from the Services and are resuming practice and would be pleased to receive trade catalogues, etc.:—

Mr. A. D. Knapton [*A*] (late Capt.), 39 Centrecourt Road, Worthing, Sussex.

Mr. Ellis E. Somake [*F*] (late W/Cdr. R.A.F.), 7 Handside Lane, Welwyn Garden City, Herts.

Mr. Edmund Fisher Ward [*A*], White Cottage, Chipperfield, Herts. (King's Langley 3035.)